THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

FEBRUARY, 1896.

THE Council of the Royal College of Veterinary Surgeons met on Wednesday, 22nd January, to do a very large amount of business. There was a good attendance, and the first business of particular importance transacted was the determination as to how the marks awarded by examiners should be arranged. It was in the minds of the majority of the Council that when they passed the new rules, it was intended that, if a student obtained 45 marks collectively, in his written and oral examinations on any subject, that number made it a "pass." At the recent examinations the examiners did not seemingly understand what was a distinct instruction to them, and they rejected every man who made less than 45, either in his written or his oral examinations. A man making 22 marks in his written, and 23 in his oral, did not pass. But a man making 22½ in his written and 22½ in his oral, total 45, all the same, was passed. This subject was well discussed, and the Council almost unanimously decided that it matters not, whether the candidate obtains his minimum number of marks either in the written or in the oral, or between the two, he passes. It is now possible for a candidate who is a bad writer but a good speaker, to obtain, say, one mark in his written, and 44 in his oral, to pass his examination.

The next business entered upon was a motion by Mr. Edgar, for the appointment of a committee to reconsider and if deemed advisable, to amend the first schedule referred to in bye-law 52. For some reason or other Mr. Edgar requested permission to withdraw his motion, but then after receiving the consent of the Council, he gave notice of another motion, and that was virtually to the effect, that no one could enter a college as a veterinary student unless he was in a position educationally to register as a medical

student. Our readers who have sons and pupils aspiring to become veterinary surgeons, should carefully mark this—we would also like to point out that if the difficulties placed before aspirants to the profession become too great, then it will be a matter to be taken up by Government, because there is no doubt, that the Government having protected and assisted us by virtue of the Charter and the Penal Clause, etc., etc., they have granted, will look to us to supply the British public in general with fair-class useful practitioners, and certainly the Government will object to us making the entrance to the profession so difficult that this class will diminish—even it may be, ultimately, as extinct as the Dodo. To take a sensible view of the matter, is it likely that a farmer, for example, is likely to keep his son at school until he is eighteen years of age to befit him for his preliminary examination, and then send him to college for four or five years, so as to enable him to make a humble livelihood by calving cows, firing horses, treating colic, &c., and making perhaps £150 a year; that farmer, we think, would be a fool, and we would advise him to make his son a draper or a grocer; at the same time although giving this advice, the profession will suffer very much indeed, as undoubtedly the best men we have in the profession are those who have a thorough knowledge of agricultural pursuits. The public and the teachers do not want "toffs" who do not know the near from the off side of a horse, when they arrive at College, and who, when asked to pick up a foot, or put on a twitch, or pull at a rope, look aghast, and also at their cuffs, and their nice white hands. What we like to see among freshmen is a thorough knowledge and love of the lower animals when in health, and we consider that Mr. Edgar's motion if carried will strike with maleficent effects on a class of young men who would make our best veterinary practitioners. Let it be understood that a high standard of education we approve of, but having regard to the duties that, as a rule, fall to a veterinary surgeon to perform, and the class of man necessary to do so most successfully, we maintain that not only will the public suffer, but that the men who pass the portals of the veterinary profession, will not be those likely to be a credit to us or themselves as practitioners. A good education by all means, but, at the same time, we must consider the laws of supply and demand, and the fitness of the tool for its purpose; in short, we would much rather educate a young man for the practice of our profession, whose

knowledge of any language but his own is of a rudimentary kind, or, in fact, *nil*, who loves the lower animals, who knows the points of a good horse, and the various breeds of cattle that he will ultimately have to deal with. I am of opinion that a preliminary examination which demanded a knowledge of these matters, at the sacrifice even of a foreign language, would be a wise procedure. I offer this as a suggestion of some value for the consideration of the Council of the Royal College of Veterinary Surgeons.

ESSAY ON "THE DIAGNOSIS OF LAMENESS IN THE HORSE."

BY "BADMINTON."

(*Continued from page* 17.)

Hip-Joint Lameness.—The diagnosis of this lesion is a difficult and unsatisfactory business to the veterinarian. Though of not so unfrequent occurrence as to render its appearance unfamiliar, the symptoms are of so general a character as to leave much doubt in one's mind as to the correctness of the diagnosis. Hip lameness is not uncommonly associated with rheumatism or the scrofulous diathesis in young animals, but the most common seat is the trochanter major of the femur. In this latter seat it is termed by some "Trochanteric Lameness." Among the symptoms are the following:—There is a restraint in the action of the joint in walking, quite unlike the free forward and backward motion of nature; a discernible hesitation and stiffness accompanying the displacement of the thigh, and a consequent shortening of the step on the affected side. There may also be a certain gesture of abduction, or rather a suggestion of circumduction, similar to that which may be observed in lameness of the shoulder. But inasmuch as this manner of gait may also occur in association with other affections, such as enlargement of the spermatic cord, or disease in the inguinal region generally, it is not pathognomonic. Absence of these affections, however, must be accepted as an important element of the case. This abductive or circumductive movement is not always distinctly seen while the animal is walking, so the pace should be increased to a trot. Says Principal Williams, "There is 'a hop and a catch' in the lame limb, and a want of movement in the quarter which, to the practised eye, is quite suggestive. The whole of the quarter is elevated with

as little motion of the hip as possible, the other articulations being flexed with ease." In some severe cases, there is elevation of the foot while standing, and a relaxed condition of the gluteal muscles. In *hip-joint* lameness, there *may* be heat felt, and in some cases pain caused by pressure applied per rectum, or by pressure of the bones one against the other; but in trochanteric lameness, the heat and swelling are marked, and there is pain on pressure. The swelling of trochanteric lameness is more apparent on comparing the two sides, and to see it distinctly, the practitioner should stand both behind and at the side of the patient as the shades of light sometimes hide it from observation. The symptoms of a milder form of hip-joint lameness, and that arising from disease of the trochanter, do not differ in any peculiarity of *gait*. Atrophy of the muscles has been considered as a valuable symptom. In both forms of lameness, it soon manifests itself in the muscles of the quarter, and is apt to lead the practitioner to confound the disease with fracture. But in disease, the wasting and inequality of the quarter appear after the animal has been lame for some little time, whilst in fracture, they are seen immediately after the displacement of the bones. It must be borne in mind, however, that the condition may be the result of the non-use of the joint arising from a state of rest induced by the presence of other lesions remote from the hip, as spavins, ringbones, etc.

Stifle Joint Lameness is of two kinds, viz. :—That affecting the joint proper or femoro-tibial articulation, and that affecting the articulation of the femur with the patella.

The ordinary inflammatory phenomena are sometimes discoverable, but perhaps the more important symptoms are those manifested in the gait and in the position of the limb when the animal is at rest.

Lameness in the Joint Proper.—Standing with the limb flexed, the thigh upon the pelvis, and the tibia upon the femur, is obviously the attitude which the animal will instinctively assume in order to avoid painful pressure of the bones against each other. This is the position while the animal is at rest, but when made to move the relative positions of the various bones are altered, and instead of being flexed, the stifle is maintained in a rigidly extended state. In this manner the joint is locked, its movements suspended, and as a result the heel of the foot touches the ground first.

Lameness from Disease of the Bursa-Patellæ.—As in the preceding form the position while standing is that of semi-

flexion and in addition there is a swelling in front of the joint caused by increased secretion of synovia.

This swelling is prominent, hard and *persistent* when the leg is extended. As regards the gait, there is usually some dragging of the toe, difficulty in flexing the joint and bringing the leg forward; the movement being performed stiffly and with a suggestion of circumduction.

Hock-Joint Lameness is characterised principally by a want of flexion in the joint and the animal generally goes on his toes. In spavin lameness particularly, the lameness is aggravated and rendered more apparent by the following method:—Take up the lame leg and flexing it well at the hock keep it in this position for a minute or two. When released and the animal sent on at a trot the lameness is increased, in some cases so much so that the horse is unable to put the foot to the ground and hops on three legs. Personally I have found this simple plan a great aid to diagnosis of this common disease.

The Nature of the Lameness.—The detection of the seat of lameness and the determination of the nature of the same, are steps so nearly related that when the knowledge of one has been acquired, the discovery of the other cannot be far off, at least in the majority of cases.

I had intended here to discuss the characteristics of the commoner lamenesses, but time forbids more than a short reference to some of them.

Navicular Disease.—The diagnostic signs are:—

(1) Negative and (2) Positive:—

(1). The negative signs are the absence of any apparent disease or injury in the limb which might account for lameness. Thus we limit the seat of disease to the foot. This region must now be explored, and if we except some positive symptoms—which are most frequently inconstant and which will be referred to later– there will be no appreciable signs, and we further locate the seat to the interior of the foot.

(2). Most commonly these symptoms are insidious in their development, pointing being the first, though, as before stated, not a constant symptom, or, there is a peculiar shifting or uneasiness in the feet. There is a form of the disease, however, which is manifested suddenly, is transient, or may be metastatic, attacking different feet at intervals, and which is said to be rheumatic in character. But to return to the usual form; after a varying period of time, lameness succeeds, accompanied by a shortness of step, and the animal goes on his toes. This peculiarity of gait causes excessive wearing

of the shoe at the toe, which is more noticeable when the lameness is in one foot only. The patient avoids bringing his heels down and digs his toes into the ground. There is sometimes heat and tenderness upon pressure in the hollow of the heel, and redness of the frog and sole immediately below the navicular bursa. Redness of the frog and sole, however, may arise from bruises, so it is not to be depended upon.

The most positive signs, then, are those manifested in the gait.

A horse suffering from this lameness comes out of the stable, after an interval of quietude, stiff and lame; he may be scarcely able to put his lame foot to the ground, but after he has been exercised for a short time, particularly if the ground be soft, the *great* lameness disappears. He is afraid to go down hill, and when doing so the lameness and gingerly, or "cat on hot bricks," style of gait is very distinct, on account of his trying to avoid putting weight on the heels. After awhile, the heels become contracted or "wired in," the frog shrunken, and sole more concave.

The age and breed of the animal are points to be taken into consideration. Young animals are rarely affected, and the disease is commonest in well-bred harness horses. It rarely happens that a horse is attacked for the first time in both feet, but from pointing or resting the lame foot in the stable, and favouring it while out, more weight and work is imposed on the sound foot, which soon causes it to fail.

Cases are reported, however, in which the lameness was permanently confined to one foot, but no doubt these are rare.

"*Laminitis*" *or* "*Founder.*"—The symptoms of this disease vary with the cause in their rapidity of manifestation and in their severity. When due to violence to the feet—concussion for example—they come on suddenly and are soon severe; when due to other causes they come on more gradually, and are less severe. If seen in the earliest stages, the first thing noticed is unwillingness in moving, and if made to "stand over," the animal appears to be stiff in the shoulders and loins. If brought out and walked on he goes on his heels in a scrambling kind of manner, jerking his hind legs up quickly. The lameness improves if the animal be kept moving, and he soon appears all right again; and so the time when treatment would be attended with the greatest success is lost. As the disease progresses, the animal begins

to blow, sweats, and assumes certain positions according to which feet are affected. If the *fore* feet alone are affected, the hind limbs will be advanced as far under him as possible, the fore extended and resting on the heels, and the animal every now and then sways himself backwards, and raises his toes. When compelled to move, he first shuffles his hind legs further under him, then, throwing all his weight on to them, raises the trunk and advances the fore limbs, bringing them down again very timidly.

This is the usual form caused by concussion. A quick way to diagnose is to attempt to back the animal, when he will at once elevate his toes and throw his weight on his heels. When the *hind* feet alone are affected, he stands with all his feet as far under him as possible, "all of a heap," as it were, and is almost unable to move one way or another. Should *all* the feet be affected, the standing position assumed is similar to that when the fore feet alone are affected, but in these cases—especially if the animal has had a previous attack—he generally goes down, lying stretched out on his side, with the limbs stretched out to their utmost, or pawing the ground almost incessantly. The pulse is accelerated, full and bounding, respirations increased, and the visible mucous membranes are injected; hoofs are hot to the touch, and if gently tapped with the hammer, the animal groans with pain. The relief experienced when the animal goes down, appears to be immediate, and this point bears on the treatment.

In chronic laminitis, a horse goes on his heels, consequently there is a greater growth of horn at those parts. Confirmed cases show a succession of rings around the hoofs which are irregular, are thicker at the heels than at front, and run towards the anterior part of foot. "Grass Rings" are regular, and have wider interspaces, and the sole in chronic laminitis is convex instead of concave, constituting what is known as "pumiced sole."

Sidebones may or may not cause lameness, depending to a great extent on the class of animal in which they are found. They are commonly met with in heavy draught horses, and if associated with a strong, open, and well-developed foot, do not, as a rule, cause lameness. If found in the lighter bred horse, however, or in any in which the pace required is more than a walk, they cause lameness sooner or later.

Sidebones are commonly met with in the fore feet, hardly ever in the hind. To detect their presence, it is necessary to take up the foot. Naturally, the lateral cartilages are yielding and elastic, but when ossified they lose this character,

becoming hard, unyielding, and enlarged. The deposition of bone may be uniform, involving the whole substance of the cartilage, or it may be in isolated spots, either at the junction of the cartilage with the pedal bone anteriorly, or involving the posterior borders, forming a hard kernel-like enlargement.

The anterior sidebone more commonly causes lameness than the posterior one.

Sidebone lameness is characterised by the toe of the foot being first brought to the ground; when both feet are involved, by a shortness of step and want of elasticity or springiness in action, resembling that of navicular disease.

Ringbone Lameness is generally occasioned during the formation of the deposits. When fully formed, they may or may not cause lameness, depending mostly on their position. If found involving the pastern or coffin joints, they are termed "True" Ringbones. "False" Ringbones are found about the middle of the os suffraginis. These latter are due to an increased development of the roughened ridges of the bone, which give attachment to the sesamoidean ligaments, and do not, as a rule, cause lameness.

"True" ringbones are termed "high" or "low" according as to whether they involve the pastern or coffin-joints respectively. But both forms may exist at the same time. When involving either articulation, they always cause lameness at their commencement, but when anchylosis is completed, such lameness may almost, if not entirely, disappear. In other cases, there is obstinate lameness. They vary in size, and the degree of lameness caused is not proportionate, some small ringbones causing greater lameness than large ones. Those situated at the front of a joint cause greater lameness than those found laterally. Forcible flexion of the joint generally causes pain, as also does pressure on the enlargement, especially on the softer and more recent deposits. The tread of the animal differs according to the position of the ringbone. Says Principal Williams, "If in the fore extremity, except the deposit be on the posterior aspect, the patient puts his heel to the ground first; but when in the hind pastern the toe touches the ground first, always when it is situated in the upper position except it be in front; when in the lower position the heel comes down first. From this peculiarity in putting the foot to the ground, it is apt to be confounded with laminitis, seedy toe, and inflammation of the coronary band. It differs from laminitis by the absence of pain at the toe, freedom from

fever, etc., and by the heat being confined to the upper part of the foot only. An examination of the foot will determine whether there be a seedy toe or sand crack in its front; and the absence of the striated appearance of the wall of the foot will distinguish it from inflammation of the coronary substance.

Splints cause lameness manifested mainly by the following symptoms:—

(*a*) The animal may walk sound and even trot so on soft ground, but is exceeding lame when trotted on a hard surface, and this lameness increases with exercise.

(*b*). The extreme dropping of the head when the sound foot comes to the ground is characteristic of splint lameness.

(*c*). Tenderness on pressure and some little heat may be recognised, even before there is any visible enlargement. In some cases, considerable soft swelling may be felt in the earlier stages, and in acute cases threatening abscess, the lameness is extreme.

Sprain of the Flexor Tendons.—This term is a misnomer, as the sprain is really of the check ligaments, either carpal or tarsal.

Sprain of the superior check ligament has been already described. Those to which we now refer—the "inferior carpal check" and the "tarsal check ligament" arise from below the upper extremities of the metacarpal and metatarsal bones, run down the legs posterior to the suspensory ligament, and become attached to the perforans tendon. There is no superior check ligament, or, at least, only a rudimentary one in the hind limb.

The inflammation arising in these ligaments extends to the flexor tendons. During the earlier stages, the heat and swelling are confined to the ligament; later, the same conditions are found in the tendons. When the parts are pressed upon, the animal evinces pain, often stands with knee bent, and heels raised, and when moved, digs his toes into the ground. When in the hind-leg, flexion is very imperfectly performed; he seems to throw the limb behind him as he lifts it from the ground, and the fetlock and hock are not flexed as in sound action. When standing, the heel is raised. To detect very slight sprains, especially if situated in a hind-leg, it will often be necessary to compare the thickness of both legs by careful manipulation, as the swelling can only be detected in that way on account of the coarse hair and thick skin of cart-horses' legs. In a better bred animal, a difference in thickness can be seen as well as felt.

ESSAY ON LAMINITIS.*

BY P. ABSON.

LAMINITIS, or inflammation of the feet, is a disease of common occurrence and of great importance to the veterinary surgeon, and it is for this reason that I have chosen it for the subject of my essay.

The draught horse, the hackney and the pony, are all liable to be affected with this painful and distressing disease, and if not promptly and skilfully treated may remain lame for the rest of their lives. I think there cannot be a more pitiable sight than to see an animal suffering from this disease; the distressed look shows us the agonies he is suffering, for what can be more painful than an inflamed highly sensitive organ like the foot, which, unlike most other parts of the body, is unable to relieve itself by swelling, on account of the irresistible horny box in which it is enclosed. The disease although chiefly confined to the feet may affect other parts of the body, as the lungs, bronchi, and intestines, by extension of the inflammation and for this reason it was at one time called "metastatic."

In order that the pathology of the disease may be understood it is essential to know the anatomy of the foot. To describe the anatomy of the foot in full would take up too much of your valuable time and be wearisome, so I will but give a very short account of it.

The foot is a complex organ consisting of a horny box, containing the os pedis, os navicular, and os coronæ, the lateral cartilages, ligaments and secreting structures, along with arteries, veins, nerves, lymphatics and fatty structures.

The hoof is a truncated cone in shape, enveloping the softer structures, and is divided into wall, sole, and frog.

The wall is that part of the hoof seen when the foot is on the ground as well as small inflected portions forming the bars. The wall is again divided into toe and quarters, although there is no distinct boundary line, the toe being that anterior part which is placed on the ground. It is the oldest, deepest, and thickest part of the hoof. On both sides of the toe are the quarters, inner and outer, extending as far backward as the inflection of the wall to form the heels, and are thinner and not so deep as the toe. They expand slightly when the foot is brought to the ground. The wall is convex externally and is covered over by a modified horn, the periople, a secretion from the coronary cushion (perioplic

* Read before the Edinburgh Veterinary Medical Society.

ring). Internally the wall is concave, and lined with horny laminæ, consisting of plates of horn arranged perpendicular to the surface, receiving between them, in a dove-tailed manner, the sensitive laminæ; the two are only separated from each other by a layer of soft epithelial cells. The function of these cells is to prevent the two parts being separated from one another, and to allow a little movement.

On the superior border of the wall is a groove, the "cutigeral groove," for the reception of the coronary cushion.

The sole is that horny structure situated on the inferior surface of the foot, between the lower border of the wall and bars. Posteriorly, it has a triangular notch for the insertion of the point of the horny frog. The inferior surface is scaly, concave, and does not quite come to the ground. The superior surface is convex and studded with numerous little holes for the reception of the papillæ of the velvety tissue, these holes being the open ends of the horn-tubes.

The frog is the soft triangular or wedge-shaped mass of horn situated between the bars; the apex is inserted into the triangular notch in the sole. On the inferior surface the frog is cleft, forming the middle lacuna, the space between the frog and bars being the lateral lacunæ.

The secreting structures consist of:

(1) Sensitive laminæ.
(2) Coronary band.
(3) Velvety tissue or sensitive sole.
(4) Perioplic ring.

The coronary band is a vascular structure situated in the cutigeral groove. It is made up of vascular papillæ, which secrete and project into the horn tubes of which the wall is composed, and a large plexus of blood-vessels and connective-tissue.

Sensitive sole, also called velvety tissue, is found on the solar aspect of the os pedis, and is made up of vascular papillæ, blood-vessels, nerves and connective-tissue, the same as the coronary band.

The sensitive laminæ are laminæ secreted by the coronary band; they are vascular and very sensitive, and are arranged in rows perpendicular to the surface of the os pedis, and as I have said before, interdigitate with the horny laminæ of the wall and bars. They are attached to the wall of the pedal-bone by connective-tissue, and are supplied by blood-vessels that pass through the foraminæ of that bone.

Some anatomists say that the sensitive laminæ secrete horn during health, but this is disbelieved by others. In disease, I think, it is well known that they secrete horn, and it is for this reason that I have described them as secreting structures.

The fatty frog is situated between the lateral cartilages and above the horny frog. Superiorly is the flexor pedis perforans tendon and the navicular bone. It is composed of fat, connective-tissue, elastic tissue, blood-vessels and nerves. The function is to modify concussion.

I am afraid, if I were to describe the bones, etc., it would be wearisome and take up too much of your time, so I will continue with the

Etiology.

The causes of laminitis are many and varied, but in the majority of cases I think it is due to the thoughtlessness of the rider or driver.

Draught horses are much more subject to this disease than the lighter breed, and this can be accounted for by the weight of the cart horse being greater. This increase in weight has to be carried by the feet, which very often have been weakened by the paring knife and bad shoeing. Small fat ponies are generally affected, and this can be accounted for in the same way. Concussion is one of the most common causes; horses with high action, or horses that have been galloped on hard roads are good examples where laminitis is caused by concussion. Long journeys with heavy loads in hot weather are constant causes. Young horses not in condition are more liable to become affected than horses of mature age that have had regular exercise or work. Bad feeding, sudden change of diet, such as a diet of dry corn suddenly changed to green food; barley in improper quantities, and, according to Professor Pritchard, flour gruel given to horses suffering from diarrhœa; potatoes or any food which deranges the digestive organs; large quantities of cold water given when horses are overheated; sudden chills; large doses of purging medicines when the horse is not in a fit state to receive them, are all said to be causes of laminitis.

It may be secondary to some other disease as pneumonia, bronchitis and enteritis. Some authors say that the affections of serous membrane terminate in laminitis by metastasis; Principal Williams does not agree with this view; he believes that when the feet become inflamed during the progress of

another disease, that a mucous membrane is involved, and that the inflammation of the laminæ is due to the extension of the irritant from the primary seat, by means of the skin, to the feet. The term metastasis as applied by some writers does not convey a correct meaning, for metastasis means a change in the seat of the disease. This is not the case when laminitis is a complication of pneumonia or enteritis, because the feet become inflamed; the inflammation does not move from the lungs or intestines, as the case may be, but both exist at the same time. Bad shoeing is a predisposing cause; the feet are weakened, and are unable to stand the concussion and the weight of the body. Laminitis when seen in one foot is usually a secondary affection to some serious affection of the opposite leg, as open joint. The sound limb has been compelled to carry its own share of weight, as well as its fellow's, for a lengthened period, and in time becomes affected with laminitis, causing terrible agony. When horses are travelling by water or rail, they have very little room allotted out to them, so they are compelled to stand in one position for a great length of time, thus predisposing the animals to laminitis.

In the *Veterinary Record*, Mr. W. Hunting, Junr., describes cases of laminitis due to the retention of the fœtal membranes. He says; "The mares aborted and retained the placenta which when not removed within 10 hours, was followed by laminitis." He goes on to say: "After removing a retained placenta, straining occurs and large quantities of chocolate coloured fluid are expelled from the uterus. This generally lasts for several days, and when it ceases the lameness rapidly disappears. In these cases the pulse is very quick and the temperature does not show a proportionate rise." They were treated by injecting a solution of boracic acid into the uterus, and immediate removal of the shoes, and the walls of the feet lowered. With this treatment perfect recovery ensues rapidly. At three different farms a second case occurred, and on this account Mr. Hunting suspects contagion. Mr. J. McLaren Young in the same journal says he saw three such cases as mentioned by Mr. Hunting, and it certainly looks suspicious of contagion.

Can laminitis be due to contagion?

There are no proofs of it, and no organism has been found, so we cannot accept it as a contagious disease.

Pathology.

In laminitis the sensitive laminæ are the principal parts

inflamed, but not these exclusively, for the sensitive sole and os pedis are also involved. The vessels of the foot are greatly congested and an exudate is poured out from them; the toe being the most vascular part, consequently the amount of exudate is greatest there. The pressure of the exudate on the sensitive structures of the foot causes great pain and unlike most other parts of the body, it cannot be relieved by swelling, because it is enclosed in a dense, irresistible, horny box. This is accompanied by fever, as indicated by the elevation of temperature, and if the attack be not severe, resolution takes place without any marked structural change. The temperature falls to its normal standard, the inflammatory exudate gradually becomes absorbed, leaving a space between the sensitive and horny laminæ, for it was between these two structures that the exudate was chiefly confined. The space, so left, becomes gradually filled up with an imperfectly developed horn, which grows down along with the wall and constitutes "Seedy Toe."

The finding of this space between the sensitive and horny laminæ caused the erroneous belief that the process was one of absorption of the uniting material between the sensitive and horny structures.

If the inflammation is very severe and of long duration, the exudate, by constant pressure against the wall in one direction and the pedal bone in another, causes the latter to descend. This descension of the pedal bone and a perverted secretion of the horny sole, constitutes what is known as a "Convex Sole," or commonly called "Dropped Sole" or "Pumice Sole." The sole in this case is convex, thin, weak and spongy, due to the malsecretion of the sensitive sole.

In more acute cases where the exudate has been very great, combined with the perverted secretion of the sole, and where the shoes have not been removed, the pedal bone pierces the horny sole and is exposed.

In other cases a further change than in the sensitive laminæ takes place. The periosteum becomes detached from the surface of the pedal bone by an accumulation of the inflammatory exudate beneath it. The substance of the bone, its vascular canals and spaces are filled with this exudate, which is of a dirty red colour, consisting of broken-down blood. By this plugging of the canals, etc., the circulation is greatly impeded, and in extreme cases, necrosis of the pedal bone is the result, from want of nutrition. When the bone is involved, laminitis is an incorrect term for it. Peditis, as suggested by

our Principal, would be a more appropriate name for it. By pressure of the inflammatory exudate the bone becomes absorbed round the borders and is reduced in size, especially at the toe and sides, in proportion to the amount of pressure. At the same time, the bone is rendered more brittle and friable by ossification of the exudate within its substance.

Frequent attempts are made by nature to relieve the inflamed imprisoned parts of their horny covering. This, however, is not very often accomplished, but a ribbed appearance is left on the outer surface of the wall, indicating that attempts have been made to do so. Elevated ring may be seen on healthy feet, but these differ from those seen on a laminitic foot. The rings in laminitis are irregular, and run close together towards the front of the foot, but in a healthy foot, they run together at the heels and are wider apart.

Changes in the Secreting Structures.—The sensitive laminæ sometimes in very bad cases become ossified. This is a very undesirable change, because their valuable healthy function of modifying concussion is lost, and if along with this there be a friable condition of the pedal bone, fracture of the latter is apt to occur. In very acute cases, where the pedal bone has been moved from its proper position, there is pus between the sensitive and horny laminæ, instead of a serous exudate, and this, not being able to find exit in any other way, is discharged from the coronet. Suppuration may only be present at the coronet, causing the horn to separate from the coronary cushion. After absorption of the exudate, the space left is filled up by an imperfect secretion of horn, part of which is secreted by the coronary cushion and part by the sensitive laminæ.

Mr. W. H Brooke, M.R.C.V.S., describes a case of *Gangrenous Laminitis*, which may be interesting and is as follows:—

"The *post-mortem* showed the sensitive laminæ to be in an advanced state of gangrene, being of a semi-pulpy consistence, and of a greenish hue, with a space between the horny and sensitive laminæ, extending round the entire toe, quarters and heels, and containing remains of disintegrated laminæ and inflammatory material, the whole having a disagreeable odour."

He concluded by saying: "The cause, although probably influenced by the lymphatic constitutional condition, no doubt had its origin in an injury to the foot, of a violent nature," which, however, he was unable to trace.

Changes in the horn.—By the pressure of the exudate

within the horny box, the normal position of the pedal bone is altered, and in consequence of this, the shape of the foot is also altered. The superior part of the foot is contracted, and the foot in general has a flattened appearance, and the surface is marked with the rings already described. The sole instead of being concave, is soft, spongy and convex, causing it to bulge below the inferior margin of the wall, and on this account requires very careful shoeing.

The pedal bone may penetrate the sole as before alluded to.

Laminitis may be divided into three forms, acute, subacute and chronic, according to the severity of the disease. The chronic being that form remaining after the more acute symptoms have passed off.

Acute Laminitis.--This may affect the fore or hind feet, or both, or even one foot.

Symptoms when the fore-feet only are affected.—The animal is found to be very much distressed and fevered and excessively lame, hardly daring to move a foot from the ground for a second. The pulse is strong, full, and accelerated, which is a characteristic sign of the disease; the respirations are hurried, the nostrils dilated, and the nose extended; profuse sweats bedew the body. There is a general cramped appearance, the fore-feet are extended in front of the body, and the weight brought to bear on the heels; the toe being the place where the exudate is greatest is elevated to relieve the pressure; the hind limbs are drawn under the body. The animal will be noticed to swing back in the halter, or if it be not fastened up, will back into a corner to support itself against the walls; a groan may often be heard indicating the severity of the pain. The animal is moved with great difficulty, but frequently it lies down on its side with the legs fully extended, and scrapes the floor with its fore-feet. In this position the pain seems to be somewhat relieved and the respiratory movements are not so frequent, and if it be made to rise it does so with the hind feet first, the same as a cow does. If made to advance, the hind legs are the first to be drawn forward, then with a sudden leap the fore-feet are advanced. The feet are hot, the coronets swollen, and a throbbing of the plantar arteries can often be felt.

When the Hind Feet only are affected, the number of respirations are increased, the pulse is full, strong, and accelerated, and the mucous membranes highly injected. The symptoms are very much the same as when the fore-legs are the seat of

the disease, except in the position of the legs. All the four feet are brought together under the body, the fore-feet are drawn backwards and the weight is put chiefly on the toes; the hind legs are drawn forwards, and the weight is brought to bear chiefly on the heels. When the hind feet are affected, the pain appears to be more severe than when the fore-feet only are affected, and the task of making the animal move is greater also. There is a constant resting of the feet, first one and then its fellow, but the recumbent position seems to give great relief, and it is taken advantage of. Some horses will not lie down, and in these cases the respiratory movements are greatly accelerated and the pain more intense, and death is often the result.

When all four feet are the seat of the disease, the animal very seldom remains on its feet, but lies down, and it is almost impossible to make him rise. The feet are hot, the plantar arteries throbbing, and a combination of the symptoms manifested when the fore and hind legs are affected. If the feet be examined by gently tapping with a hammer, great pain is evinced.

Laminitis in one Foot.—This is generally a result of a severe injury to the opposite limb. The sound limb has to carry the extra weight for a great length of time, in order to relieve its affected fellow. This in time becomes laminitic; the originally lame leg is now compelled to carry the body weight, and the laminitic foot is entirely elevated from the ground, or, if the animal is made to walk, the heel is brought to the ground first. The temperature is not elevated to such a degree as in the other forms.

Although the symptoms of laminitis are very characteristic, it has been mistaken for other diseases, as nephritis, because when the loins are pressed, pain is manifested; for disease of the respiratory organs, on account of the hurried respiratory movements, dilated nostrils, etc. All these mistakes may be avoided if the standing position be carefully noticed, and the feet examined. It may also be mistaken for myositis of the gluteal and muscles of the loins, but if the following symptoms be carefully observed no mistake should be made. There is great stiffness in both diseases. In myositis there is no desire to lay down, but if the horse be put down the fever and pain are increased. This is not the case in laminitis, for the animal generally assumes the recumbent position, and seems to get great relief from it, as

indicated by the temperature becoming lower and the pulse less frequent. In inflammation of the muscles, the horse fixes its feet on the ground and does not move them until he is compelled to do so, but in laminitis, when the animal is roused to its feet, it becomes restless, alternately resting the feet, especially if the hind feet only are affected, and again lies down whenever he gets the opportunity.

Acute laminitis may terminate in resolution, the parts gradually gaining their normal condition, or in suppuration, gangrene, or the chronic form.

Treatment of Acute Laminitis.—A difference of opinion exists as to whether a large dose of purgative medicine should be given or not. Principal Williams is of opinion "that a violent cathartic should never be given, because the operation of a purgative tends to laminitis, and they generally cause death, when the disease of itself has been of a tractable or even mild form." Other veterinarians are greatly in favour of a good purgative.

If a laxative be given and the constipation be great, enemas of warm water, frequently given, help in a great measure to unload the bowels. The tincture of aconite given in about ten minim doses (Fleming's), and the nitrate of potash in small but repeated doses, or if the pain be very great the tincture of opium gives relief. In laminitis arising from intestinal irritation, bi-carbonate of soda is very applicable. Bleeding either locally or from the jugular vein is practised by some veterinarians, and is believed to have good effects. When bled locally, it is usually done either from the coronary plexus or at the toe. The former is the better place of the two; it gives relief to the congested vessels and consequently to pain. Bleeding from the toe has been tried, but not with such good reults, for it has generally been followed by suppuration and sloughing of the hoof. It is important that the shoes should be removed in the early stage of the disease, the wall rasped down and the feet put into bran or linseed poultices. Hot poultices are in favour with some practitioners, and I am of opinion that more benefit is derived from them than the cold ones. They cause dilatation of the blood vessels, soothe the sensory nerves, and so give relief to pain. They should be kept moist and be frequently changed. Boiled turnips make a very good poultice; they hold a lot of moisture and are very handy, especially at a farm where they are easily procured. Hop poultices are also used. Our Principal in his surgery recommends hot poultices during the acute stages, and cold after the urgent symptoms have passed off.

Cold may be applied to the feet by means of a piece of thick felt, previously soaked in cold water; it should be strapped round the coronet and allowed to hang down over the hoof. Another method is to place the animal in a box, the floor of which has been covered with clay and soaked in water. I do not think this method is to be recommended, although I have seen cases treated in this manner. If the heels are high, they should be lowered, but paring the feet in any other way is apt to do harm.

In some cases the horse is put in slings, but this should not be done unless he will not lie down, for great suffering is caused by compelling him to stand on his already highly-inflamed feet. If the horse cannot be made to lie down, it may be advisable to cast him; if this is done once or twice he will soon find the benefit derived by it, and take the recumbent position himself, only getting up to feed, and that is only for a very short time.

When a patient lies down and will not get up, he must be turned over several times daily; the bedding should be plentiful and kept dry. If there is any difficulty in micturating, the urine should be drawn away by means of the catheter, this adding greatly to the comfort of the suffering animal. The food must be of the simplest kind, such as warm bran-mashes, linseed gruel, and a little hay; some febrifuge medicine may be given in the drinking water. After the acute stage has passed off the amount of food may be increased and a little corn allowed. When the lameness is improved and the febrile symptoms have disappeared, the walls of the feet should be rasped down to allow a certain amount of weight to bear on the sole. Apply a thick bar-shoe, wide webbed, and thinner at the heels and toe than at the quarters, so forming a rocker; this enables the horse to throw its weight on the heels, The thickness of the shoe modifies the concussive shock when the foot is brought to the ground. The shoe should be so fitted that the sole carries a certain amount of the body weight.

If the case is not a very severe one, it may not be necessary to apply a bar-shoe; an ordinary thick shoe, thin at the heels, may answer the purpose. A blister round the coronet is very beneficial in increasing and promoting a healthy secretion of horn.

If the pedal bone has penetrated the sole, it should be covered over with tar and tow, and the foot shod with a bar-shoe and leather sole. When the bone is slightly covered over with horn, the horse ought to be turned out to grass and

allowed to remain there until the horn has gained a proper thickness.

Another mode of treatment for "acute laminitis" is to apply the thick, broad-webbed bar-shoe and compel the horse to walk on soft ground for a short time each day for several days, and give repeated doses of physic. After a time the soreness somewhat passes off and the animal is able to walk better. I have heard of cases treated in this way doing well, but I consider it a cruel method, and when animals do well with the former treatment I do not see why the animal should be walked about in great agony.

Chronic Laminitis.—This form may arise independent of the acute, but it is more often a termination of the latter, and may at any time develop into the acute form from trivial causes.

It is described as that condition of the feet remaining after the febrile symptoms have subsided, the lameness being a result of an altered condition of the foot, rather than of a primary inflammation which by this time has subsided.

Symptoms.—A horse suffering from chronic laminitis will be seen pointing, resting first one foot and then another. The action or gait is also peculiar, for when the horse walks the heels will be brought to the ground first, and the toes are somewhat elevated, the movements are uncertain, and a false step is at any time liable to be made, and the horse fall down.

The feet are flat and the surface of the wall has an irregular appearance, the sole is convex, and the horn is imperfect, constituting a "pumice sole."

Treatment.—This is somewhat like that for the acute, but modified. The horse should be shod with a broad-webbed, thick bar-shoe just as in the acute form, but having in addition a leather sole; the superior surface of the shoe should be well hollowed out so that the pressure is not on the sole.

Horses very lame from chronic laminitis seldom do much good, but as a last resource the operation of neurotomy might be performed.

TUBERCULOSIS IN THE HORSE.

BY E. W. ANDERTON, M.R.C.V.S., MAYBOLE.

THE subject of the above was a valuable Clydesdale gelding, the property of Messrs. Linton Bros., Glenalmond, purchased by them when two years of age. His previous owner and consequently his previous history I am unable to find out.

My attention was primarily drawn to the animal in July of 1894, when I removed some sub-abdominal angleberries which appeared to have kept him from thriving, after which and up to July of this year he did very well.

At the latter date I was again requested to see him. I did so, accompanied by another veterinary surgeon who was with me at the time. We diagnosed pneumonia and laryngitis. The usual symptoms of these diseases were present although his temperature was never throughout his illness 103°. We treated accordingly, giving ammon. carb. balls, belladonna electuary, medicated steam, and counter irritation. The patient ate well, rested perfectly and became very fat, but still no improvement occurred in the lungs, and the larynx got worse. I now ordered hot cloths to the chest and poultices to the throat. This I continued for a fortnight continuing the same medicine. The lungs improved a little, and as the owners were becoming impatient, I removed the hot cloths and stimulated the sides with embrocation. I blistered the throat but with no effect. The breathing became so distressed that a tracheotomy tube had to be resorted to. This I inserted on the 31st of July and through the tube my patient could breathe quite easily. The only medicine he was receiving now and up to his death was Fowler's solution of arsenic in 1 oz. doses twice daily. From the above date I did not again visit him until August 28th, when I found him greatly improved. He had become very fat and his breathing was quite natural through the tube and on closing the tube he breathed quite naturally through his nose, so I at once removed the tube. He had still a hard cough, and on auscultation I found crepitations in some parts, rhonchus in others and patches appeared quite consolidated. I advised my client now to let him take his chance but to continue the arsenic treatment. From that day I never again saw him alive; frequently seeing his owners I heard how he was doing. At first he apparently did very well, so upon fine days he was allowed out to grass. Laterally, however, he commenced falling off in condition and became very weak; the latter he always was, especially for such a big horse. The week before his death, which occurred on October 25th, he did two half days ploughing. This no doubt brought about his death a little earlier than it would otherwise have been. I am told he evinced great abdominal pain, but previous to this there were no abdominal symptoms whatever, his digestion and bowel action being always perfect.

Post-mortem.—On opening the abdomen the immediate cause of death was readily seen to have been enteritis. The great colon was very much inflamed and quite empty; its walls were unusually thickened (about 1 inch), black in colour, and fragile to the touch. At the junction between the folds the tissue was immensely thickened and consisted of a mass of caseating tumours, which I diagnosed to be tubercular, and accordingly sent to Professor Davis of the New College, and I have received word that my diagnosis was correct. These tubercular masses were also found in the stomach and remainder of the intestinal track, although the colon was by far the most affected. The liver, spleen, lungs and larynx were also affected.

TUBERCULOSIS OF THE BOWEL IN THE HORSE.

BY SAM CHAMBERS, ESQ., M.R.C.V.S., HUDDERSFIELD.

ON Friday morning, November 22, a light cart mare, the property of a butcher here, was observed to be in pain, and as it was thought to be an ordinary attack of mild colic, a draught containing ginger oil and warm ale was administered, and as the symptoms showed no signs of abating, I was sent for by telegram in the afternoon. I found her evincing a good deal of pain; pulse 60, temp. 103. There was no tympanites and no sweating; the bowel sounds were entirely absent. No fæces passed during the interval between the time when she was attacked and her death.

The treatment consisted in giving repeated injections of warm water; hot cloths to the abdomen; draughts containing tr. opii, chlorodyne, chloral hydrate, oil. None of these seemed to have the slightest affect in relieving the pain, which gradually became more intense, and she died on the following night.

History.—The mare was at work on the day before her seizure (Thursday), but the owner informed me that she aborted twelve months ago, and since that time she never appeared to be quite herself—sweated readily, had lost her former spirit, and her appetite was somewhat capricious. She was in foal again.

Post-mortem.—The immediate cause of death seemed to have been peritonitis; the peritoneal cavity contained much fluid, and the membrane itself was inflamed and covered by soft lymph.

The last part of the small intestines was thickened, in some

places enormously so, and, cutting into it, a number of deep and wide ulcerations were found; but beside these actual ulcerations, the mucous membrane was greatly infiltrated with cheesy-looking and, in places, blackened material, which excavated the submucous tissue away from the ulcerations, so that only a small portion of the bowel was really intact. This condition was found through nearly the whole extent of the ileum.

There was a small abscess in one kidney, and, cutting across the liver, I found a small amount of gritty material.

The other abdominal and thoracic organs appeared to be healthy.

A portion of the bowel was sent to Principal Williams, New Veterinary College, Edinburgh, and he informs me that the disease is tuberculosis of the intestine.

MUCO ENTERITIS AND ITS SEQUEL IN A FARM MARE IN FOAL.

BY J. AITKEN, JUNR., M.R.C.V.S., DALKEITH.

ON Sunday, the 8th Dec., about 2 p.m, I was called to see the above. On my arrival I found the mare lying in a stable in a very uneasy state. Pulse 70, respirations hurried, temperature 104°. Visible mucous membrane very much injected, particularly the vulva, which was very much swollen, giving one the impression that she was about to abort.

She had been carting turnips the day previous from an exposed field to the pits, and was found badly on going into the stable in the morning. She had not taken her supper, and was purging as if she had had a dose of physic.

I had the mare removed into a loose box, gave her 1 oz. of chloral hydrate with 10 drops of Fleming's tinct of aconite in a quart of gruel (oatmeal). Ordered hot fomentations to be applied to the abdomen by a blanket wrapped round and round. If purging still continued give at midnight 1 oz. of chloral hydrate in a pint of port wine; ½ lb. of mustard to be made up and rubbed on abdomen.

9th.—Saw the mare about 8 a.m. Pulse 85; temperature 104°; breathing quieter; mare had been very restless all night. Chloral and wine given about 2 a.m.; mustard also applied; towards six in the morning, mare gradually became quieter; purging not so frequent.

I tried her with a little tepid water, with 3 drms. of chloral and 10 drops aconite, which she drank readily. Had the

blanket again soaked in hot water and wrapped round abdomen, followed by dry clothing, and ordered a little tepid water to be given occasionally with 3 drms. chloral and 10 drops aconite every four hours.

A purulent discharge escaped from her vagina occasionally.

Saw her again about 7 p.m. Still keeping quieter, although pulse 95; ears and legs very cold; had her legs bandaged with straw bandages or ropes, and dry clothing applied. Noticed her going slightly lame on near hind leg. Owner thought she injured herself when tossing up and down, as she was in many funny positions during nights of the 8th and 9th. I told him I was afraid this might be the beginning of laminitis or founder. Discontinued the chloral, but continued aconite, and allowed her a small quantity of hay, of which she partook.

10th.—Saw her in the morning; was not surprised to find her suffering from severe laminitis as the saying goes. Pulse 90; temperature 105°.

With difficulty got off the shoes; her feet being much grown, had them reduced. When the mare lay down after the exertion, applied hot poultices, gave her 1 oz. of chloral hydrate with 10 drops of aconite, as she seemed in much pain. Left instructions to apply hot water frequently to feet; examined her per vagina, could introduce my two fingers into oss. Told owner she would sooner or later pick foal, but to let nature follow her course.

11th.—Found her standing in usual position in such cases, but did not stand long. Pulse 70; more eager on the hay; allowed her gruel and the aconite as formerly.

No motion in bowels for the last 24 hours; gave Glyster, and still continued poultices to feet.

12th.—Mare still improving: pulse 60; lies most of the day. Outside of elbow and stifle begin to get bruised. Continue same treatment with a little bruised oats and bran.

13th. — Much improved; stands longer; walks badly. Owner thinks she will carry her foal, as no discharge comes and vulva resumed natural appearance.

15th.—Called in the morning; found her lying; owner told me that on entering the box in the early morning, he found the foal behind in its membranes, and, as he said, with a "fresh dose of founder." I told him I was rather pleased she had aborted, as I thought she would improve more rapidly. We continued the poultices till the 20th, when we had them removed, and she walked round the box not so much amiss.

NEPHRITIS IN A MARE.

BY T. O. RICHARDSON, M.R.C.V.S., LYTHAM.

ON November 26th last I was called in to see a brown mare 14.1 hands, 12 years old, belonging to Mr. J. Winderbank, Ship Hotel, Lytham, which the man said was lame in both hind legs. On arrival I had the mare brought out of the stable and saw that she walked very stiffly, appeared rigid about the loins, and turned with difficulty. There was heat and tenderness over the region of the kidneys. The pulse was 52, temp. 102. The animal had a staring coat. There were attempts at micturition, but no urine passed.

On examining the bladder per rectum, it was found to be fairly distended, so a catheter was passed, and about a pint of dark coloured urine withdrawn; this, on being tested with nitric acid and heating, gave a slight precipitate. I diagnosed the case as one of inflammation or acute congestion of the kidneys.

Treatment.—Gave five drachm physic ball, and after having had the legs well rubbed and bandaged I applied hot packs to the loins and warm rugs over all.

November 26th. Symptoms much aggravated, pulse 85, temp. 104. The mare was in much more pain than on the previous day, and kept attempting to roll upon and bite her loins. The urine was small in quantity and contained a large amount of albumen. I examined some microscopically and found red blood corpuscles, fibrinous casts, and epithelial cells.

Treatment.—Tincture opii 1 oz., tincture aconiti Fleming 8 drops in a draught. Also a hypodermic injection of pilocarpine gr. 1½ which caused a profuse perspiration. On seeing her again at night the physic had commenced to operate and the pains were less frequent, and during the day she had eaten a little bran mash.

November 28. She was much the same as on the previous morning, pulse 87, temp. 104·3. The bowels were not acting so freely and no urine had been passed. There was no improvement in the appetite.

Treatment.—Gave another hypodermic injection of pilocarpine and also Ol. Lini. 12 ozs., Tinct. Aconit. F., m. 8. I saw her again at night and she seemed much brighter and had eaten a small mash.

November 29th. She was much better, pulse 76, temp. 103·3, had eaten a mash and some carrots, and had passed urine (which was much clearer), twice.

Treatment.—I again gave Ol. Lini. 12 ozs., and Tinct. Aconit. F., m. 8. At night she was still improving.

November 30th. She was again much better and able to stand firmly, pulse 60, temp. 102. She walked round the box and was eating fairly well. From this date she continued to do well and was out of my hands on December 7th. From November 30th to December 7th, the treatment consisted in looking after the warmth and comforts of the animal and the administration of a laxative.

SARCOPTIC MANGE OF THE OX.

BY W. R. DAVIS, M.R.C.V.S., NEW VETERINARY COLLEGE.

It is generally held, and indeed authorities state, that sarcoptic mange is rarely, if ever, seen in cattle. Neumann, page 158 in Fleming's translation, has the following:—"Sarcoptic scabies of the ox is only incidentally mentioned here as history is limited to the possibility of its existence. The incomplete, and even inexact, observation of Thudichum relative to the development of scabies in people who had been in contact with a mangy cow cannot be utilized." An account, then, of its indubitable existence will be interesting:

In December last, while at a dairy farm near Edinburgh inspecting pigs, I chanced to go into one of the byres, and opposite the door noticed two cows, the bases of whose tails were perfectly hairless, the skin wrinkled and cracked, and on looking closer patches were seen on the croup, one of them being as big as a soup plate. The patches were raised, and on pressing the margin a felted mass of hair and epithelium came away, leaving a red surface below. On looking over the other cows in the byre, a large percentage of them were found to be more or less affected. On asking the byreman what was wrong with the cows, he told me that they had the "itch," adding that they had had it for months, and that he wished they could get something to cure the cows and himself as well, because he had caught it from them.

On examining the man's arms I was speedily confirmed in the opinion that I had formed as to the nature of the affection, namely, that it was sarcoptic scabies. His skin from the elbows to the wrists was covered with papules, vesicles, and crusts, and as Condy's fluid had been applied curatively, his arms were pretty objects.

He told me that not only himself but all the men about the place had it. On expressing my dread lest there should be an extension to the maids also, I was re-assured on learning that there were no womenkind about the place (the young woman with the milking-pail and the three-legged stool, and a face for a fortune exists for a good many districts in picture-books only). I took a scraping from one of the cows, and on mounting a few particles in glycerine and solution of potash, the acari were readily discovered. They agreed in every detail with the description of a sarcopt —the body ovoid, rostrum short, and two well-rounded cheeks, short thick legs, the posterior ones being concealed beneath the body when the creature was viewed dorsally and also in the disposition of the suckers. They appeared to be for the most part larger than sarcoptes hominis. With regard to the origin of the outbreak there was a mangy horse stabled in one of the byres, but whether he gave it to the cows or whether they gave it to him I am unable to state. The parts affected were mostly the tail and croup flank and neck, and the superior part of the udder in some cases.

By a process of isolation and the energetic application of Vleminck's solution (slaked lime 1, sulphur 2, water 20, boil), to which a little tragacanth was added for the purpose of thickening the liquid, the disease is rapidly dying out. It seems to be much more amenable to treatment in cattle than does scabies in the horse.

Only one of these cows appeared to suffer in general health. This animal was the worst affected of the herd. She had lost her appetite and gave little milk, but showed no emaciation. I saw five other men on the farm whose arms were affected like the byreman's already described.

It is stated that there are many byres round Edinburgh where a similar disease exists among the cows, but so far no other outbreaks have been observed in the practice of this College. Some years ago I had experience of two perfectly similar attacks of mange in cows, but on those occasions I did not look for the acarus.

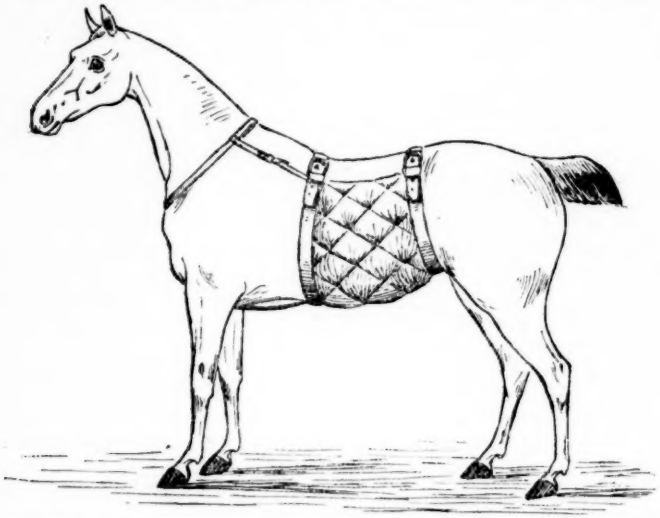
HEATED SALT FOR THE RELIEF OF ABDOMINAL PAIN.

BY HENRY C. WILKIE, F.R.C.V.S., F.Z.S.

THE application of continued heat for the relief of certain kinds of abdominal pain is, I think, often of great value, and would, perhaps, be more frequently resorted to were it not

that the usual method of obtaining it—by hot water—is unsatisfactory, and difficult to carry out with any thoroughness. Common salt retains heat for a considerable time, and is quite the best readily-obtained material which can be used for the purpose. I have found the application of this agent an easy matter, and in many cases of great benefit, particularly in pain referable to the large colon, or to the stomach, in foals.

With these patients, particularly, it does not seem quite admissible to administer frequent doses of sedative medicines if this can be avoided, and in very early life I think it would



be difficult to say what sedative we can give with perfect safety in a case in which pain is violent and more or less present for twenty-four hours or more.

The salt, well dried, is put into two calico or canvas bags to form a layer, when spread out, of from half-an-inch to an inch in depth, and the mouths of the bags are sewn up.

Diagonal seams are then sewn through both sides of the bags, and through the salt, in opposite directions, so as to form little closed diamond-shaped pockets, each holding a small portion of the salt. This prevents gravitation, and insures an equality in the layer of salt throughout the extent of the bags.

One of the bags is then placed in an oven, and when sufficiently heated, is taken out and placed at once round the abdomen, and tied rather tightly over the back.

A collar is then readily contrived, with strong webbing or straps, to run from the neck to the top of the bag on each side, and another piece runs from the bottom of the collar, between the fore legs, and is attached to the middle of the bag on its front edge. These fasteninge prevent the salt bag slipping either backward or round, which if carefully put on, is held close up to the body, without much chance of movement.

In some cases, from the conformation of the body, the bag will have a tendency to shift forwards, and in these a crupper is put on. I have seen considerable relief obtained in this way, and much valuable time gained, while, what is very important with foals, the animal's energies are not rapidly exhausted. In older animals, the application is made in the same way, but the fixings require to be of a stronger character, as it is most important the salt bag should be close to the body, and practically immovable. I enclose a sketch of the bag applied to a mare, which shows a method of fixing the application, by permanently arranged straps.

The weight of a bag of salt of this kind requires some regulation, as it is easily made too great, and the thinner the layer of salt, the closer the diagonal seams require to be, and the more frequent the changing of the bags.

A piece of mackintosh cloth laid over the bag when on, is of service in diminishing the loss of heat.

CYSTIC TESTICLES IN RIGS.

BY T. M. INGLIS, ESQ., M.R.C.V.S., FORFAR.

IT is quite common to find retained testicles diseased, but as I have had two in one week affected very similarly, I should like to record them.

The first case was that of a colt two years and five months old. After casting and incising the ring in the usual manner, I introduced my hand, and with much difficulty found the testicle, which was lying against the right kidney; it appeared extremely large and was soft.

I brought the cord out first (double), and pulled gently with the one hand, then pressed my hand in between the testicle (which the traction had now brought to the abdominal ring) and the ring, and so manipulating it,

managed after some time to get it out. The cord was very long and strong, and the testicle was quite as big as an ostrich's egg. After suturing, I allowed the colt to rise, but he was not many minutes up when a large portion of the small intestines came out between the stitches and hung down about 18 inches.

I immediately cast him again, washed the intestines with antiseptic fluid, and after reducing the protrusion restitched the wound, allowed him to rise and kept him very quiet. He completely recovered in a fortnight. The vaginal sac contained a large quantity of fluid and a very imperfectly developed testicle. The second case was that of a colt sixteen months old. With this one I had not nearly so much difficulty, as I readily found the testicle which was lying in the pelvic cavity beside the bladder. It was very much smaller than the former one and therefore did not offer so much resistance when getting it through the ring. This colt also made a perfect recovery. I sent the cyst to Principal Williams and he informs me that it contained $4\frac{1}{2}$ ozs. of serous fluid and an atrophied though apparently normally constructed testicle.

CHOKING IN A PONY.

On Friday I received telegram—"Come at once, piece turnip in pony's throat." On my arrival there I was told it had gone to farm-yard where trough is kept with pig's meat—boiled turnips, barley, etc.—took a bite of par-boiled turnip, gave a scream, ran back, and made frequent attempts to vomit. This continued for four hours before message came. I found pony making frequent attempts to eject obstruction; could find no trace of obstruction from usual manipulation. On pressing larynx caused great pain. Examined mouth carefully with mouth-piece, but could find nothing. Gave a little linseed oil. He gave a cough, and on his head being let down, the oil came pouring from his nostrils, symptoms being much aggravated. Again I examined his mouth with no result; waited a little; again gave oil with the same result. After the acute symptoms passed away, I let him have a little hay, which he chewed in a half-hearted fashion. He then made an attempt at swallowing but failed, again bringing on the choking sensation. After that subsided I gave him more oil, with the same result, showing that the obstruction still existed. Then

I put on a muzzle and left him, with instructions that he was to be looked at during the night.

On visiting him next morning, removed muzzle; he drank a little water; a bite of hay was given him, which gave him pain when swallowing, but there was no choking. He then ate a bran mash quite heartily.

SWINE FEVER.

On 21st January, 1896, a largely-attended conference took place in London between Mr. Long and the representatives of local authorities in England and Scotland with reference to swine fever. The object of the meeting was to enable the President of the Board of Agriculture to ascertain the best opinion from the different local authorities as to the practicability of placing some check upon this epidemic. After the preliminary statement of Mr. Long, several of the representatives present put forward the opinion that the Board ought to revert to the former system of allowing local authorities to deal with the disease, the cost of compensation to be borne as at present by the Imperial Government. It was the feeling of a considerable number of those present that this was a most useful suggestion; but Mr. Long promptly interposed a barrier to its further debate. He said he could not ask Parliament to give effect to such a proposal, as the responsibility must rest with the central board in London. This strong expression of opinion had the effect of narrowing the discussion, and it appeared that very few of the delegates had any other definite scheme to put forward. Mr. Dobbie, of Midlothian, in the course of some remarks, in which he criticised the system of inspection practised by the Board of Agriculture, suggested that licenses should be insisted upon for all pig-styes, and that there should be the power to destroy, as well as to cleanse, infected piggeries. Mr. Long pointed out to him that the power to destroy already existed, but with regard to licenses he said nothing. One or two of the delegates argued that the payment of compensation has a mischievous effect, and ought to be discontinued. That view, however, found very little support, and at the end of the interview Mr. Long, in thanking those present for their attendance, stated that he viewed such a suggestion with disapproval, and would certainly adhere to the present system of compensation for the animals slaughtered.

NOTE ON AN ANATOMICAL PECULIARITY IN A DONKEY.

BY O. CHARNOCK BRADLEY, NEW VETERINARY COLLEGE, EDINBURGH.

WHILE dissecting the posterior anti-brachial region of a donkey recently a student came across what struck him as being an unusual arrangement of the muscles, and immediately called my attention to it. On completing the dissection,

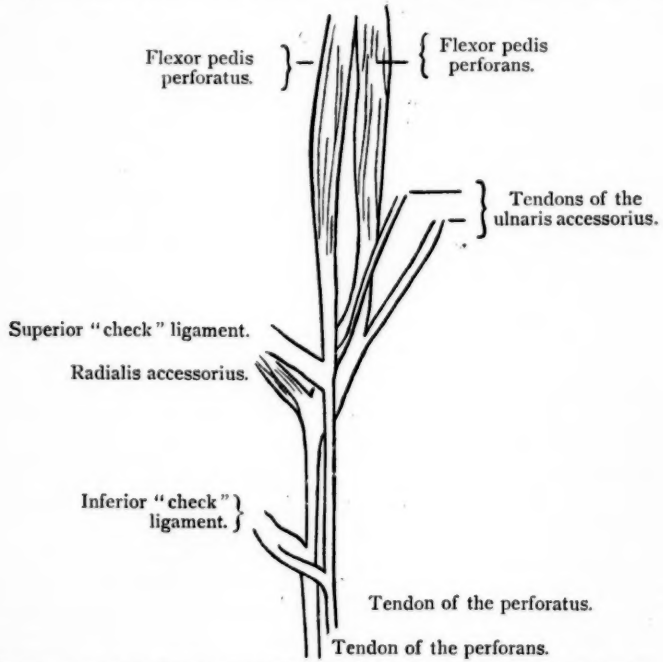


DIAGRAM OF THE STRUCTURES VIEWED FROM THE INSIDE OF THE LIMB.

the following rather interesting peculiarity revealed itself:—The ulnar portion of the Flexor Pedis Perforans (also known commonly as the *Ulnaris Accessorius*) was provided with two tendons, one of which was thick the other thin. The thicker tendon joined that of the perforans in the usual place, the thinner one joining the *perforatus* tendon just above the carpus, and opposite to the attachment to this tendon of the superior carpal or "check" ligament.

The Radial portion (*Radialis Accessorius*) of the Flexor Perforans, and the Superior Carpal Ligament were disposed in the usual manner, but the Inferior Carpal Ligament was attached to both perforans and perforatus tendons, the portion blending with the perforatus being much smaller than that joining the perforans.

In a second donkey, which we were fortunate enough to secure for dissection, the Ulnaris Accessorius was perfectly commonplace, having only one tendon, and that joining the perforans; the Inferior Carpal Ligament, however, joined the perforatus tendon (as well as the perforans) from both the inside and the outside, whereas in donkey No. 1 this structure joined the tendon from the inside only.

Reference to the diagram (of the first case) will probably make this description more clear.

I should esteem it a favour if those who have dissected the donkey frequently would let me know if they have ever found a case similar to the above, or any deviation from the usual arrangement in this part of the body.

TUBERCULOSIS OF THE DOG.

BY W. R. DAVIS, M.R.C.V.S., NEW VETERINARY COLLEGE.

In view of the fact that tuberculosis of carnivora is seldom alluded to in works on pathology (a recent text-book on the subject in the description of tuberculosis of animals omits this species altogether) it becomes important to record cases of this disease in dogs and cats when they are met with in practice. On the 6th January a lady brought a toy terrier to the College for treatment. She stated that the animal had been alright up to about two months previously, when it was noticed to have some difficulty in swallowing, held its head and neck to one side, moved stiffly, and had a cough; the appetite disappeared, and the animal became emaciated. When examined on the date mentioned, the dog was found to be very thin, the breathing was abdominal, and pressure in the intercostal spaces caused pain. Percussion and auscultation showed well-marked pleurisy, with effusion. The larynx seemed unduly prominent, but nothing abnormal could be detected on an examination from the mouth. The owner's idea was that the dog had swallowed something which had stuck in the throat, and that this was the cause of its illness. The larynx was very sensitive, and pressure on it caused a good deal of pain.

After keeping the dog under observation for a few days in the college kennels, the owner was advised to have the animal destroyed, for from the history of the case, from the long illness and gradual emaciation and from the condition in which the little patient then was, it was felt that we were only anticipating its death by a few weeks. The real nature of the disease was, however, only revealed at the *post-mortem* examination. The animal was poisoned by a few drops of Scheele's prussic acid. The thorax contained seven ounces of clear serum. The costal pleura on both sides was studded over with innumerable tubercles. Both lungs were bound to the chest wall by numerous adhesions, the pulmonary pleura was covered by tubercles as also was the pericardium. The bronchial glands were converted into a huge caseous mass which at first was mistaken for the heart; the mediastinum was very greatly thickened and infiltrated with tubercular deposit. The diaphragm was of great thickness and both on its pleural and peritoneal surfaces was covered by miliary tubercles. In the abdominal cavity the great omentum mesentery, parietal peritoneum, folds to the bladder, the surface and parenchyma of the liver and to a much less extent the spleen and kidneys were packed with tubercles. In the great omentum the distribution of the process by the blood vessels was beautifully shown. The brain was examined but no trace of the disease was discovered in this organ or in its coverings.

The inability to swallow or the difficulty in doing so was due to pressure on the œsophagus by the mediastinum and bronchial glands.

Sections of the liver stained in the usual manner by carbol fuchsin showed the tubercle bacilli in great numbers.

This is the third case of generalised tuberculosis of the dog which has been met with in this practice in little more than a year, and there has been one case of phthisis in the cat during the same period.

When we consider the manner in which pet dogs and cats are often treated (fondled and kissed and even allowed to eat off the same plate as their owners), it is apparent that tuberculosis, when it affects carnivora, is extremely likely to be a source of contagion to human beings, and it becomes our duty to insist on at least its occasional, if not on its frequent occurrence in dogs and cats.

A VETERINARY CATECHISM.

WE have been favoured with a proof-sheet of a Catechism which, we learn to our great astonishment, is to be shortly issued by the Animals Department of the Board of Agriculture. We append a note of some of the questions and answers

Q. What is the Animals' Department?

A. The sublimated essence of wisdom, skill, and prudence.

Q. Who is the visible embodiment of this wisdom, skill, and prudence?

A. The presiding genius of the Department is one who by his intimate acquaintance with veterinary medical science is competent to decide all difficult and complicated questions relating to the treatment of domestic animals.

Q. What proofs are to hand of his fitness?

A. All good and loyal citizens take these things for granted, asking no questions.

Q. What are the principal functions of the Department?

A. These are manifold and intricate, and, for the greater part, quite beyond the comprehension of practitioners and stock-owners; it is, therefore, profane to try to comprehend the incomprehensible.

Q. Are all the proceedings of the Department equally inscrutable and incomprehensible to the ordinary man?

A. A sacred mystery surrounds their words and deeds, and it is highly improper and even wicked to attempt to penetrate this mystery.

Q. Must, then, the practitioner and stock-owner accept without hesitation the dicta of the Department on all points?

A. They must do so, and allow no scruples to interfere with the performance of all duties prescribed by the Department.

Q. But what must the practitioner do who finds the utterances and edicts of the Department inconsistent and contradictory?

A. He must first learn that no utterances of the Department can by any possibility be inconsistent or contradictory; he must treat all such unholy thoughts as the suggestions of the devil; he must subject himself to a long course of fasting and penance, in the hope of reconciling himself to the decrees of the Department; finally, he must choose between reconciling the apparently irreconcilable, at all costs, and resigning his diploma.

Q. What must the practitioner do who finds the decrees of the Department inconsistent with the teachings of science and with the statements contained in accredited text-books?

A. The practitioner will have no difficulty whatever if he reason correctly and think rightly. As the Department cannot err, any statement contained in text-books must necessarily be false and heretical, and must therefore be rejected as being not only absurd but likewise damnable.

Q. What is the plain duty of practitioners when they find themselves thus embarrassed with heretical doctrine?

A. Their duty is to denounce their false teachers and to send all text-books whose doctrine differs from the decrees of the Department to London, in order that they may be burnt by the common hangman.

Q. Can you find any historical parallel to the Department?

A. The best historical parallel is the Holy Inquisition, which did so much to stamp out heretical opinion and purify the moral atmosphere.

Q. Can you mention any detail of the work of the Department which comes within the grasp of the veterinary practitioner?

A. One is the definition of swine fever.

Q. How is a stock-owner to proceed when he sees his swine sickly and suspects this disease?

A. He may, if he likes, ask a common veterinary surgeon to give an opinion.

Q. Then, by way of appeal to a higher authority, what must he do?

A. Ask a policeman.

Q. And when the policeman has gravely and attentively considered the case, as only a policeman can, what is next to be done?

A. The policeman must wire to the Department, giving his opinion and asking for instructions.

Q. What is to be done with this telegram?

A. It will be sent to the youngest fledgling in the Department who will at once instruct a veterinary surgeon, a stranger to the place where fever is suspected, to examine the swine, alive or dead, always, of course, in consultation with the policeman, who represents, here as ever, the majesty of Government, and send the viscera to the Department for examination by the Infallibilities. These will, in the fulness of time, give their verdict and publish their orders.

Q. Why should the Department naturally entrust to its youngest clerk the delicate duty of selecting a consultant surgeon?

A. Because ignorance is always synonymous with impartiality.

Q. Is an intimate acquaintance with the locality in question an indispensable qualification for the Department official who deals with the case?

A. On the contrary, it is, as already indicated, a disadvantage. The less he knows about the locality and the case the better. Let him trust entirely to the inspiring influence of the Departmental atmosphere, and he will infallibly judge correctly and without bias.

Q. Will the surgeon first consulted by the owner of the swine have any just cause for complaint that he has been ignored?

A. None whatever. If he should grumble he gives evidence of vanity, conceit, and presumption. It is the paramount duty of the Department to check such evil tendencies and to inculcate humility on all veterinary practitioners.

Q. But if the surgeon first consulted was the regular surgeon of the stock-owner and was acquainted with the details of the stock, has he even then no cause for complaint? Or, supposing he is considered by his fellows infinitely superior to the second?

A. None whatever. From the lofty point of the Department all veterinary surgeons are alike—mere worms crawling in the dust. Mere professional or local differences in point of character and capabilities are quite invisible to the Department.

Q. Has the Department any special aim in view when it thus subdivides the work of veterinary surgeons?

A. Yes, it has in view the circulation of the wealth of the country, that is, the compulsory spending of money—whether to good purpose or not, is not the concern of the Department. Further, it has in view the distribution of that portion of the national wealth which naturally goes to veterinary men over as large a surface as possible.

Q. But if veterinary men answer that their share of the national wealth is already so meagre that it will not bear subdivision, what is to be said?

A. Simply this, that the Department has, far superior to its scientific and administrative purposes, a moral purpose in view. Let veterinary men acquire and practise the virtues of thrift, patience, and self-restraint, and they will be quite happy.

Q. Will this action on the part of the Department tend to promote friendly feeling among veterinary surgeons?

A. Yes, by mixing them all up indiscriminately it will teach Christian charity and forbearance, and show them the importance of union. [We feel inclined to italicise the last clause.—EDITOR, V. J.]

COMMUNICATED.

BOARD OF AGRICULTURE.

Annual Reports of Proceedings under the Contagious Diseases (Animals) Acts. Markets and Fairs (Weighing of Cattle) Acts, etc., for the year 1894.

THIS is a most interesting and valuable compilation. In it the Chief Veterinary Officer, Mr. Cope, and the "Principal of the Animals Division," Major Tennant, strive, with acknowledged ability, to educate all whom it may concern in the history, prevalence, and "administrative" treatment of contagious diseases in general, and of swine fever and anthrax in particular, in the United Kingdom for the year 1894.

With its 142 pages of letterpress, and its six beautifully-coloured full-size and full-page drawings, with its two interesting and very distinctly-marked maps, showing the "swine fever and rabies outbreaks reported in Great Britain," together with its carefully-compiled statistical tables, etc., this Report might well be mistaken for a Journal of Morbid Anatomy and Pathology, or by the colour of its cover—a small Parliamentary Blue Book. The Report is presented by "Command of Her Majesty to both Houses of Parliament," it doubtless is in the hands of every lay and travelling inspector, in the hands of county councils and constabulary, etc., proving a source of most valuable information and instruction to them; and it might have been a gracious and gratifying and friendly mark of recognition had a copy been placed in the hands of every M.R.C.V.S. in the kingdom—their number is not large, and their past services surely merit it. However, the price is only 1s. 4d. from any bookseller. It should be in the hands of every veterinary practitioner—perusal will well repay the cost.

The Report of the Chief Veterinary Officer is placed first. The opening sentence is already well known, and has been remarked upon. "After struggling for years . . . at no previous period have the live stock of this country been so free from these specific affections as at present"; and then follows "the well merited compliment to the Veterinary Inspectors at the ports" for the performance of their "most re-

sponsible duties." Every one rejoices at the freedom of the country from contagious disease, and joins in thanks and congratulations to the Port Inspectors; but, in common justice to the profession which gave him birth, the Chief Veterinary Officer should have added, "At no previous period have the members of the veterinary profession been so snubbed and set aside; at no previous period have more degrading duties been assigned them; at no previous period have their official fees been less; and never in the past have they been so superseded by lay inspectors and policemen as at present."

The one statement is just as true as the other. The veterinary profession have aided well and fought long in the struggle against contagious disease; and in this Report there is not, so far as I can see, one word of recognition nor thanks for their serivces. It would almost appear that here, as elsewhere, the veterinary officers of the Board cannot get beyond their own Department and their own men. Are they bound with official chains?

Swine fever, and the illustrations of its morbid appearances, occupy from the fourth to the fifteenth page. In the opening paragraph it is stated that, "During the whole of the year a very large part of the time of the veterinary officers has been devoted to the examination of the viscera of pigs slaughtered under the provisions of the Swine Fever Act of 1893." Possibly too much of their time, to the exclusion of other and more responisble duties, which have been delegated to other and less competent hands.

"Immediately on the receipt of information of an outbreak or supposed outbreak of swine fever, a telegram is sent to a veterinary surgeon residing in or near the place where the disease is reported, requesting him to visit, and report, and examine the diseased or suspected animal; and if he considers there are sufficient indications of swine fever, he is authorised to slaughter it and forward the viscera to the Board Laboratory in London." This sentence (also in the first paragraph), I cannot understand; from my own experience it is simply not true, and the same we are inclined to believe may be said of another sentence on p. 66, in the Report of the Principal of the Animals Division, par. 2, line 10: "If the local veterinary surgeon has confidently decided that swine fever did not exist, the restrictions imposed on the premises have been at once removed."

During 1894, from June to December, there occurred in this district at least twelve severe outbreaks of swine fever in two clusters of piggeries, embracing more than 800 pigs.

Notice of each of these outbreaks was at once and promptly sent to Whitehall Place, London, and in not a single instance was a telegram sent "*immediately*" to a veterinary surgeon residing in or near the affected districts, and in no instance whatever was it left to a local veterinary surgeon to decide whether swine fever did or did not exist; the viscera were invariably forwarded to London for the decision of the Board's veterinary advisers.

I have known two full days elapse before the waterproof bag and accompanying instructions reached the veterinary surgeon residing in or near the place. I have known the local veterinary surgeon time after time report the existence of disease, and time after time his telegrams and himself were ignored, and other professionals sent from three, five, and seven miles distance, often days afterwards, to pick up his cases. I remember finding a couple of cases neglected by the Board one Monday—dead carcases were thrown on the dunghill, and diseased pigs lying all over the place. I sent an urgent message to Whitehall at once, and on the Friday, no veterinary having been sent, things were as they were and far worse; and how in the face of such occurrences in 1894 the chief veterinary inspector can publish the statement—"Immediately on receipt of information . . . a telegram is sent to a veterinary surgeon residing or near . . ." I cannot make out, and my little experience coincides, I make bold to say, with that of the vast majority of veterinary surgeons residing in or near the places where the disease has been known to exist.

That the Board of Agriculture has failed to cope with swine fever; that many outbreaks have been shamefully neglected; and many so called attempts at suppression proved abortive; that prompt and effectual stamping out has not been energetically put in force, but miserably imperfect isolation substituted in its place; that lay inspectors and constables know little of the disease, and often care less; that the system of cleaning and disinfection carried out under their instructions is frequently little short of farce and a sham, and a shame and disgrace to the Board which employs them—are matters well known to the profession at large; but of this there is not one sentence in this Annnal Report, only some very interesting and valuable notes on the nature and symptoms and appearance of swine fever, which any veterinary surgeon may read with profit and pleasure. The number of *post-mortem* examinations during 1894 is given, leading to the conclusion that the

disease is more prevalent during the summer than the autumn months, a statement not invariably warranted. The disease is described as of two kinds: "1. Ulceration; and 2. Diphtheritic exudation," and as occurring in two forms, viz., "the acute and fatal, and the chronic or mild." The illustrations are really beautifully executed (far too much so, surely, for members of parliament and county councillors), there are also some excellent notes on other diseases of pigs which have been the "subject of veterinary examination on behalf of the Board."

A page is devoted to verracose-endocarditis of swine, accompanied by a very clearly-defined drawing; and it is remarked that Continental authors have observed this morbid condition as often associated with swine-erysipelas, which, again, is described as a disease of low infective power, which appears to be more common on the Continent than in this country. Apparently, the attempt to class swine-erysipelas as a contagious disease alongside swine-fever has not found countenance.

Pleuro-pneumonia and foot-and-mouth disease and rabies are touched on briefly. Anthrax has many pages devoted to its consideration, several reports by French, German, and Continental veterinarians being given in full. Farcy, and glanders, and mallein are passed in review, but nothing as yet appears as to tuberculosis and tuberculin. Surely the time has arrived for the consideration of the latter by the Board of Agriculture.

The Report of the Principal of the Animals Division may be passed over without much comment. Why Major Tennant should be Principal of the Animals Division, or why his staff of district inspectors and assistant inspectors should supersede veterinary surgeons in the suppression of contagious disease, is what we veterinarians in practice fail to understand. These men are simply veterinary surgeons in all but the name—doing the work veterinary surgeons, as inspectors, formerly performed, and doing it far less intelligently and effectually, but at infinitely increased cost to the country. The Principal of the Animals Division has probably discovered ere this that the "administrative treatment" of swine fever requires more veterinary knowledge than he or his staff are in possession of. His "isolation theory" has long ago been exploded in practice. He tells us in his Report that during the months of August, September, October, November, and December 28,320 pigs were kept isolated, and that of these only 294 died during the month. Does this retired military gentleman

think that during the months these 28,320 pigs were kept isolated, they did no harm? What of the cases that did not die, but lived for three or four months, and infected others so soon as the restrictions were removed? To my knowledge 100 pigs were isolated in this district, by orders of the Department, for three weeks in July and August, 1894, and the result was the creation of at least eighty cases of swine fever, and an unbroken chain of nine outbreaks of the disease thereafter. One case of swine fever left is quite as dangerous a centre of infection, as one case overlooked of pleuro-pneumonia. Long ago I found, from personal experience and contact, that this Principal did not know much about a cow. And with every feeling of respect and goodwill, I am just a little afraid that he does not know even yet too much about an animal of the porcine species.

It only remains to be added that, in this Annual Report for 1894, "The Diseases of Animals in Foreign Countries" occupy a few pages, while the statistical tables relating to "Foreign Animals," and "International Trade in Animals," make up the remainder of a volume which every practitioner should buy and peruse.

SLATEFORD, C. CUNNINGHAM, M.R.C.V.S.
January 25th, 1896.

Editorial.

THE mountain was in labour and brought forth—not even the traditional mouse! On Tuesday, the 14th January, 1896, representatives from the local authorities throughout England and Scotland assembled in London in large number, at the request of the Minister of Agriculture. The sole object of the meeting was to confer with him and give their opinions as to the means best calculated to diminish the swine fever that is at present raging amongst swine in Great Britain. The failure that has resulted from the system of operations with that end in view which has been in force for the past two years has doubtless caused great alarm to the Government. We regret, however, to notice that the proposals made by the speakers who represented local authorities were not entertained by Mr. Long. It seems quite clear, from statistics already to hand, that the present centralising system has completely failed; consequently decentralisation, or, in other words, an increase in the powers of local authorities with the object of enabling them to deal more promptly

than at present with outbreaks of fever, was the course proposed by the majority of the speakers at the meeting on 14th January. Some members of the deputation advocated no compensation—a somewhat harsh suggestion, as we think. Mr. Long's reply gave no uncertain sound; he emphatically rejected the proposals made to him by the meeting, and refused to make any change in the present arrangements. This refusal on the part of the honourable gentleman to reconsider the action of the Government was a bitter and a startling disappointment to the deputation, and it has given a painful shock to stockowners throughout the whole country. The question under discussion is a vast and important one, affecting as it does the value of the swine species of farm-stock to the extent of many thousands of pounds annually, and it has now reached an acute stage. Something must be done, and that soon, to remedy the present condition of affairs, unless we wish to see our stock of swine disappear altogether, and the measures to be taken must be prompt and thorough. One of the great defects of the present arrangement is that it is so cumbrous and involves so much delay. Infectious disease is like fire: if attacked early it is easily overcome, if neglected it may gain such a mastery that nothing will stop its progress till all that is consumable is consumed. Experiments made by distinguished veterinarians in this country and abroad have shown that swine fever is a specific disease due to a microbe, that it is easily inoculated and spreads with great swiftness, and that it may prove rapidly fatal. This last fact is the vital point of the whole matter and to it public attention must be directed, on it public attention must be kept fixed till a remedy is found. We must not stand by with folded hands and let our stock of swine perish before our eyes, whilst dilettante officials are making hopeless and heartless efforts to cope with what is in sober truth a national misfortune.

We are in receipt of communication from Mr. J. Spreull, M.R.C.V.S., Paris, which will be reviewed in our next issue.

THE JUBILEE SCHOLARSHIP FUND.

We have been asked to intimate to members of the profession who have not yet subscribed to the above, that donations will be received and acknowledged by the Hon. Treasurer, Mr. F. W. Wragg, 17, Church Lane, Whitechapel, E., until March 31st, when the fund will be closed.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

EXAMINATIONS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS, DECEMBER, 1895.

THE *Written* Examination in the various classes was held on Wednesday, December 11th, in London, at the Examination Hall, Royal College of Physicians and Surgeons, Victoria Embankment. The Oral Examinations at a meeting of the Court of Examiners, 10, Red Lion Square, on and between 18th and 20th, and the Practical portion of the Final Examination and Class B. at the Royal Veterinary College, Camden Town, on and between December 18th and 23rd.

The following students passed their examinations:

Final Examination.

Mr. Thos. McCaffery	Mr. G. Dunne
„ H. Barnard	„ G. Elmes
„ L. Barnard	„ T. S. Grove
„ W. R. Clarke	„ W. G. Gillam
„ R. G. Gillard	„ A. R. Grimes
„ E. L. Stroud	„ W. Golding
„ J. P. Murphy	„ F. B. Hodgkinson
„ W. A. Bull	„ R. F. St. Clair Houston
„ H. H. Nicholls	„ A. O. Johnson
„ G. H. Parr	„ H. A. Idenden
„ A. L. Farrant	„ E. W. Parks
„ J. A. Moffett	„ S. W. Pratt
„ C. E. Parker	„ J. Pugh
„ P. Duffy	„ C. Peirce
„ H. P. Hogben	„ Robt. Platt
„ W. Beddard	„ B. Sumner

Mr. G. Watkins.

Second Examination.

Mr. E. Fenner	*Mr. H. Milton
„ W. G. Green	„ C. J. Sanderson
„ R. C. Cochrane	„ G. P. Knott
*„ E. T. Ensor	*„ C. M. Park
„ F. C. Hobbs	„ J. B. Walker
„ A. S. Head	†„ W. M. Williams

Mr. B. Young.

First Examination.

Mr. H. S. Elphick	Mr. F. H. Ingersoll
„ H. W. Fernandes	„ C. H. Jolliffe

Mr. J. P. Stableforth.

ARTHUR W. HILL,
Secretary and Registrar.

Those marked * thus passed with 2nd Class Honours.
Those marked † thus passed with 1st Class Honours.

The Examinations in Scotland.

At meetings of the Board of Examiners, held in Edinburgh and in Glasgow on and between December 11th and 17th, the following gentlemen passed their final examination and were admitted members of the Royal College of Veterinary Surgeons.

DICK COLLEGE.

Mr. D. Bolton, Athlone
„ J. H. Carr, Kingstown
„ J. J. Edgar, Elgin
„ P. M. Edgar, Daventry
* „ F. G. Edwards, Chester
„ S. W. Haffield, Kingstown
„ J. C. Heather, Newry
„ N. Irvin, North Shields
*Mr. G. Moir, Clany
„ A. J. Sellars, Manchester
„ Mr. J. M Sinclair, Moy
* „ J. M. Watson, Kirkcudbright
„ F. S. Clay, Nuneaton
„ J. H. Conway, Cookstown
„ A. M. MCclew, Portpatrick
„ T. K. Ramsey, Dublin
E. Moynahan, Cork.

NEW COLLEGE.

Mr. W. Broomhead, Sheffield
„ T. Bowlas, Blackpool
„ J. C. De Ville, Uttoxeter
„ A. Ferens, Durham
„ J. E. Hardie, York
Mr. R. H. Knight, Bolton
„ R. Rawlins, Chesterfield
„ A. O. Hughes, St. Asaph
„ J. T. Allen, Derby
„ J. McPhail, Edinburgh

GLASGOW COLLEGE.

Mr. G. Mayall, Mossley
„ J. M. Sterling, Kippen
* „ A. S. Adams, Glasgow
Mr. J. Paton, Perth
„ D. Wyllie, Ayr

Those marked with an * being under the required age have not been allowed to register, and their diplomas have in the meantime been withheld.

The following gentlemen passed their second examination :—

DICK COLLEGE.

Mr. M. Allan
„ D. C, Barmingham
„ B. S. Cockerton
„ S. Craig
„ J. Dixon
„ C. Goundry
„ J. Grant
„ T. F. Hall
„ J. A. Hewson
* „ J. E. Holroyd
„ A. F. S. Jackson
Mr. P. J. McCloghry
„ F. J. Pringle
„ J. Robertson
„ A. Scott
„ R. C. Smith
† „ R. Wall
„ T. Wilkinson
* „ A. J. Williams
„ J. B. Kay
„ E. Launder
„ H. Leyshon

NEW COLLEGE.

* Mr. A. P. Beesley
† „ J. D. Knowles
* „ J. H. Lomas
„ A. Lawrie
„ M. J. Mitchell
Mr. A. J. O'Leary
* „ R. D. Williams
„ R. J. Bailey
* „ H. A. Ferguson

GLASGOW COLLEGE.

*Mr. H. G. Simpson
* „ D. Jack
„ J. Reynard
„ E. P. Jenkins
„ J. McIntyre
Mr. W. Crawford
„ W. Kilpatrick
„ D. Walker
„ A. Fraser
* „ H. O'Neil

J. Crawford

Marked thus * passed with Second Class Honours.
Marked thus † passed with First Class Honours.

The following gentlemen passed their First Examination.

DICK COLLEGE.

Mr. J. Cowan	Mr. A. Newell
„ P. Donovan	* „ J. J. O'Connor
„ W. Lawson	„ E. O'Neil

NEW COLLEGE.

Mr. D. McDonald	Mr. W. F. Wilson
	C. R. Twist

GLASGOW COLLEGE.

Mr. E. Souter	Mr. J. Baird
„ A. M. Spittal	„ J. P. Small

R. RUTHERFORD, F.R.C.V.S.,
Secretary to the Board of Examiners.

Edinburgh, *December 23rd*, 1895.

TORONTO COLLEGE, CANADA.

Donald Currie	Angus McDonald
Francis Duncan	John J. McGregor
John M. Farquhar	Arthur E. Miller
Truman Earl Gore	James H. Powers
Cecil Howell	David D. Reid
John S. Jones	W. J. Rouse
R. L. Kann	D. H. Super
A. A. McArthur	Jacob Wagner, jr.
Allan McDonald	E. C. Wisman

Primary examination:—Passed in anatomy: Messrs. George, Hamilton, and Lewis.

ROYAL COLLEGE OF VETERINARY SURGEONS.

LIST OF NAMES of members to be removed from Register through non-compliance with section 5, sub-section 4, of the Veterinary Surgeons' Act, 1881:—

Ackroyd, Edward Lee, Nottingham.
Anderson, William, Northain, Sussex.
Archibald, Robert, Pembroke, South Wales.
Atkinson, John Charles, Stockport, Cheshire.
Baldwin, W. E. W., Ilminster, Somerset.
Barrett, W. P., Laxton Villa, Cheltenham.
Bowhill, T., Darlington, co. Durham.
Britton, Thos. A., Kingsfield Terrace, Faversham, Kent.
Bush, W. H., Barnsbury Road, Islington.
Carroll, Michael J., Limerick.
Ching, Henry, Kingston Road, South Wimbledon.
Clarke, T. N., 23, North Parade, Penzance.
Cochrane, C. E., 53, Caversham Road, Kentish Town.
Clough, James, Whitehaven, Cumberland.
Cox, W. G. R. A., Scotwood Road, Newcastle-on-Tyne.
Dale, Thomas H., Manchester.
Dickie, James G., Nethercraigs, Paisley.
Drake, A. J. D., Gresham, Norwich, Norfolk.

Marked thus * passed with Second Class Honours.

Dyson, Clement, Hurworth, near Darlington.
Evans, W. R., Cork.
Farrance, Franklin, Eastbourne, Sussex.
Fergusson, H. C., Perth.
Forbes, A. C., Kington, Herefordshire.
Fotherby, J. Peacock, Beckingham, Norfolk.
Franklin, W., Abbey Road, St. John's Wood.
Fryth, William, 622, Coventry Road, Birmingham.
Galloway, William, Dumbarton, Dumbartonshire.
Gardiner, B. C. R., Gunton House, Blackheath.
Galwood, M. W., Old Sampford, Essex.
Gold, J. A., Ladywood Road, Birmingham.
Gooderson, F. R. P., Wincanton, Somerset.
Grant, John, Bonnyton, Rayne, Aberdeenshire.
Hallam, Ernest H., 17, Hartington Street, Barrow-in-Furness.
Harris, J., White Cross Street, Monmouth.
Hart, A. K., Girvan, Ayrshire.
Hartington, Michael J., Limerick.
Hawes, A., 38, Oxford Mansions, Oxford Street, W.
Hirst, Samuel, Broad Street, Bath.
Hodge, W. D., Plymouth, Devonshire.
Hordern, Jos. Lowe, Southport, Cheshire.
Hounsell, Thomas P., Chertsey, Surrey.
Howell, Herbert, Aberdeen Terrace, Clifton.
Hurford, R. J. G., Bungay House, High Barnet.
Jackson, Alex., Glasgow, Lanarkshire.
Johnstone, R. E., Cumberland.
Jones, W. H., Plymouth, Devonshire.
Jones, W. H., Chatham, Kent.
Jones, Richard, Llannwchylln, Merionethshire.
Keely, John, Harold's Cross, Dublin.
Kinnear, J., 735, New City Road, Glasgow.
McAleen, Jos., Tyrone, Ireland.
McConnell, Alex., South Alloa, Clackmannanshire.
Macdonald, W., York Grove, Peckham.
Marquis, Duncan, Hyndland, St. Patrick, Glasgow.
Marshall, F. T., Kidbrooke Park Road, Blackheath.
Martin, B. V., Knightstown, Navan, Ireland.
Millman, C. H., Dartmouth, Devon.
Mullan, E. P., Dublin.
Murray, Edwin, Driffield, Yorks.
Neale, C. R., Firland, Arbroath, Forfarshire.
Norbury, W. C., Catherine Street, Macclesfield.
Packman, W. C., Hednesfield, Staffordshire.
Paton, Alex., Montrose, Forfarshire.
Parsons, C. N., West Dulwich.
Penhale, John H., Bideford, Devon.
Pickworth, H. W., 18, Albert Road, Tamworth.
Powell, P. W., Stroud, Gloucestershire.
Pickwell, G. H., 1, Eaton Row, Eaton Square, W.
Prentice, E., 64, High Street, Whitechapel, E.
Radcliffe, Geo., Oldham.
Reid, Andrew, Dunscore, Dumfriesshire.
Richardson, James, Stony Stratford, Bucks.
Roberts, A. E., Tintern, Chepstow, Monmouthshire.
Roberts, W. Irwin, Newbridge, Near Ruabon, Denbighshire

Robertson, John, Madderty, Crieff, Perthshire.
Sherriott, A. J., Lynwood, Herne Bay.
Skoulding, J. B. W., Walpole Street, Sloane Square.
Sloane, R. Wilson, Moniave, Dumfriesshire.
Smith, W. J., Sunderland.
Somers, Hy. L., 25, Suffolk Street, Pall Mall.
Sorley, Robert, Hazlehead, Aberdeenshire.
Spurgin, Harry, Ongar, Essex.
Stewart, R. O. F., Montrose, Forfarshire.
Thomson, David, Petty Street, Inverness.
Thursfield, Thomas, G. N. R. Co., King's Cross.
Walker, Adams, Huddersfield, Yorks.
Ware, C. S., Leominster, Herefordshire.
Webster, William, Preston, Lancashire.
Whitney, F. W., Mareham-le-fen, Lincolnshire.
Wilkinson, Amos, Ashton-under-Lyme, Lancashire.
Wilks, P. A., Gwynne House, Hereford.
Williamson, Thomas J., Horner Terrace, Fairfield Road, Blackheath.
Windsor, H. Joseph, 2, Fleming Street, Govan, Glasgow.
Wishart, C. D., Haddington.
Wright, W. F., King's Lynn, Norfolk.
Wormald, F., Eastbourne, Sussex.
Yardley, G. M., Laintwardine, Herefordshire.
Young, J. C., Kirkintollich, Dumbartonshire.
Young, Peter, Clyde Street, Edinburgh.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

A QUARTERLY meeting of the Association was held at the Hop Market Hotel, Worcester, on Tuesday afternoon, the 12th of November. In the unavoidable absence, through indisposition, of the President (Mr. G. Wartnaby, of Burton-on-Trent), the chair was taken by Mr. Carless, of Worcester, one of the vice-presidents. There were also present Professor Pritchard, Messrs. Blakeway, Malcolm, Gibson, Birmingham; Collett, West Bromwich; Smith, Tunstall; Huband, Cheltenham; Burchnall, Loughborough; Green, Alfreton; Pemberton, Bridgnorth; Pritchard, Cartwright, Wolverhampton; A. Carless, Stafford; Barling, Ross; Gooch, Stamford; Dawes, Hon. Secretary, West Bromwich. Visitors: T. D. Walker, Walsall; and F. Foster, Worcester.

Letters and telegrams of apology for inability to be present were read from the following: Professors Penberthy, Macqueen, McFadyean, McCall, Williams, Sir H. J. Simpson, Messrs. Prickett, T. Coe, J. W. Coe, Bambridge, Aris, Grasby, Barrett, J. G. Crowhurst, Merrick, Jones, Wolstenholme, Trigger, J. F. Simpson, Olver, E. G. Crowhurst, A. Green, Spencer, and others.

Nominations and Elections.

The HON. SECRETARY, at the request and on the behalf of the President, made the following nominations for membership: Messrs. Frank H. Gibbings, F.R.C.V.S., Nottingham; Charles Taylor, Nottingham; William Herbert Taylor, Nottingham; and James Whyte, Tenbury, Worcestershire.

The election of gentlemen whose names had been duly nominated at the previous meeting was next proceeded with, and no opposition was offered in either instance. The names were: Mr. A. B. Forsyth, Cannock, proposed by Mr. Collett (in the absence of his nominator, Mr. Prickett), and seconded by the Hon. Sec.; Mr. J. Simpson, Maidenhead, proposed by Mr. Barling and seconded by Mr. Blakeway; and Mr. Evans, Stratford, proposed by the Chairman, and seconded by Mr. Malcolm.

The HON. SECRETARY read a letter, addressed to the President by Professor Macqueen. It was resolved that the subject of the letter be placed on the agenda for the next meeting.

The motion on the purchase of tooth shears was ordered to stand over to the next meeting, through the absence of the proposer.

On Fistula.

In the course of his remarks, Professor PRITCHARD said the difficulty which he experienced in coming to a meeting of this description was that of selecting a subject likely to obtain general approval. Veterinary medical associations had been in vogue for many years, and papers of all kinds had been introduced over and over again. He even thought he himself must plead guilty to having introduced this very subject on some previous occasion, but fistula, to his mind, was not an inappropriate topic for an occasion like the present. For one reason, it appeared in many parts of the horse, and the opinions that were held concerning the treatment of it varied very considerably. Therefore, it was a subject which most of them knew something about, and consequently it was a subject with regard to the treatment of which a good many of them held different opinions. Under those circumstances it certainly must be a subject calculated to give rise to a profitable discussion, for he always held that a meeting of veterinary medical associations which listened to a paper or an address, and then eschewed discussion, was next door to a failure. To attempt to exhaust the subject was out of the question, and therefore he should first of all confine himself to speaking on fistula generally, to speak of the structures in which it was to be found, to deal with the causes that gave rise to it, and then to make some general remarks with reference to special cases which they met with in some parts of the horse's body. Fistula was the condition of a portion of a structure of the body, associated with the formation of tubes, commonly called sinuses. Many of those present might have thought he should have used the word "wound," but they sometimes had fistula where there was no external evidence of a wound, although subsequently a wound might make its appearance—but the fistula might, nevertheless, as completely exist without the appearance of a wound on the surface, as if there were a wound. For example, a horse might receive a bruise to his coronet—where fistula most frequently formed—and before the wound could break out the fistula would be in existence. Before going further just let him say a word with regard to those tubes. Some scientists had endeavoured to draw a distinction between a sinus and a fistula, but to his (Professor Pritchard's) mind, it was a case of splitting straws. In the one it was said that the tube communicated with a number, while in the other the tube was a blind *cul de sac.* He had said that fistula made its appearance in certain structures, and the general opinion—expressed, probably, without thought—was that it was necessary that the structure should be of a lowly organised character for fistula to exist in it. Now, he was quite willing to admit—indeed, he should lay it down as a fact—that where they more frequently found fistula, the structures were lowly organised; but, at the same time, he must also strongly lay it down that there was scarcely a structure in the body that might not become involved in fistula. He himself had experienced a case of fistula of the ear of a horse, which was a highly organised structure. They sometimes found it in the anus, though it was not so frequently the case with the horse as it was with the dog, or still more so, the human subject. Still fistula was more frequently found in structures which were lowly organised, such as the coronet, the poll, the withers, and so on. Now, what were the causes? Injury through external violence should be placed first in the category. A quittor was perhaps as

frequently formed as the result of injury to the coronet as any other cause that could be named. Fistula of the withers principally resulted from injury either through rolling and crushing the withers, or, as was perhaps most frequently the case, through a crush from the saddle. But there were other causes which gave rise to fistula, besides injury. It might result from bad surgery. An operation improperly performed, interfering with structures which such operation ought not to affect would give rise to the formation of fistula. Injury at another part some little distance from where fistula subsequently made its appearance, would give rise to it. There were still further causes which gave rise to fistula, but he would leave them for those present to suggest in the course of the discussion if they thought well.

Let them next consider some of the special forms of fistula, and he would first take the form which most frequently happened, namely, quittors. A quittor might be produced through injury. He had heard it said that frost bites would cause quittors, but of that he, personally, had very grave doubts. Horses that were "pricked" or "bound" in shoeing, or horses suffering from separated corns would suffer from quittors. Let them probe a quittor, and they would find there were tubes frequently running in more than one direction.

All manners of treatment had been adopted—some advocated the use of the actual cautery, or the introduction of strong caustic agents; bi-chloride of mercury, for example, had been used to destroy the sinus. Others—himself amongst them—had recourse to the use of the bistoury and the injection afterwards of a strong solution or a strong caustic—he preferred saturated solution of chloride of zinc. But whether they carried out one line of treatment or another, they must either partly or wholly destroy the wall of that sinus, whether by plugging with caustic, by the introduction of the actual cautery, or by the use of the bistoury. They could not possibly succeed unless they destroyed, either partly or wholly, the wall of the sinus. The only other point in connection with the line of treatment which we should adopt is the nearest way to go to work. He had tried them all, and he had also told them what he had succeeded with better than anything else, but there was a way to make this incision when using the bistoury—a wrong way and a right way. He never hesitated to make a bold incision in the coronary band. They were told they would perhaps have a "false quarter"—an expression which ought to be effaced from the dictionary—which meant that the growth of the horn afterwards represented something irregular. On putting the probe in the sinus they might find it extend right down to the lateral cartilage; instead of putting the bistoury in and slitting in a downward direction, and so dividing the coronary band transversely, the incision should be made obliquely, that would not only facilitate the healing of the wound, but the coronary band would become as complete as ever it was, and no interference with its function would take place.

The next most frequent form of fistula they met with was in the withers, and he need not make any remarks as to what gave rise to it, beyond what he had already said. It was largely due to injury, and the treatment which he should adopt was very similar to the line of treatment which he should adopt in a case of quittor.

With regard to poll-evil, they did not see so many cases now as they used to, and that was attributed to the fact that stables were now built so much better than they used to be. It was more difficult to cure than quittor or fistula of the withers. One reason for that, unquestionably, was the greater number of layers of fascia in connection with the muscles there; and another reason was the great amount of movement which took place there. Quietness of the part affected was necessary to effect a speedy cure, and it was beyond a horse's capability to keep his head quiet for long together. They had, there-

fore, not only to deal with an extra quantity of lowly organised material, but also to counteract the fact of a greater amount of movement than in any other part of the body where fistula occurred. The treatment was exactly the same as in the other two cases. Use the knife boldly, for to make a good case of poll-evil, a man must be a good surgeon. They need not be afraid of any dangerous hæmorrhage.

He now passed to another kind of fistula, which was not generally accepted as being fistula at all. He referred to scirrhous cord. He had opportunities of examining that condition of the animal both during life and after death, and he had never yet seen a case of scirrhous cord without finding in its centre a sinus, and one as well developed as was to be found in any other part of the body. In operating upon those cases, where he had been unable to remove the whole of the substance, he had found that if he removed a portion of it as high as he could follow the thickening up, the same results accrued as if he removed the whole.

Having alluded in greater detail to his experience of a case of sinus at the root of the ear, which he said was a most difficult case to deal with, Professor Pritchard concluded his remarks by a reference to a case of fistula in the salivary duct. That was principally the result of injury, such as a kick from another horse, and they got a flow of saliva from the face. If they could deal with those cases directly after the accident had happened, it would be a tolerably easy matter, but when the parts had become partly healed and the edges of the wound indurated it was often extremely difficult to bring about a permanent closing of the orifice. In cases of that description he advised scarifying the edges of the wound, the application of a blister around the margin of it, and the painting on frequently a solution of bi-chloride of mercury of the strength of one to eight. It would be the last thing he should do to destroy the duct.

Before sitting down, he expressed the hope that he had said sufficient to excite some little interest in the minds of those present, and that a profitable discussion would take place.

Discussion.

Mr. W. CARLESS (Stafford), in opening the discussion, said they had all learned something important that day, and he hoped the members would be able to turn it to profitable account. Fistula was a thing which they all had to contend with, and in large towns they got more fistula of the feet than he did where he lived. Those cases were not so nice to treat, nor so successful as they could always wish. He thought the boldest method, as Professor Pritchard had described, was ihe shortest, the safest, and the most effectual. The knife and the hot iron were always the two instruments he preferred to have with him when he saw a case of fistula. He thought these were often inclined to interfere with the thing too much, a thorough doing in the first instance was sufficient, and then give Nature a chance. Add to that as much quietness as possible, and he thought they had before them the best method of procedure. He disapproved of the idea of exploring with the finger, they were apt in that way to make some sinuses and leave the one they were in search of altogether alone. The quieter the parts could be kept after the operation the sooner would they get well. If they had a good opening, and it was irrigated with some mild antiseptic lotion, their case would, in his opinion, succeed much better.

Mr. MALCOLM joined in thanking Professor Pritchard for his instructive address. Few questions could be dealt with of more practical moment than fistula. Personally, although he worked in a large town, he could not claim to have many cases of quittor, for he rarely, if ever, saw them. He had, however, at one time had a lot to do with poll-evil and fistulous withers. He referred to the time when he was engaged in colliery practice, and he thought

the low seams had a good deal to do with it. He also found that the boldest surgery was the best. In connection with scirrhous cord, he was both interested and instructed by the Professor, when the latter said that if they removed a certain section of it, they would have practically the same results as if they removed the whole of it. As that was a fact in the Professor's own experience, it must be of interest to all of them. If they had much scirrhous cord to deal with, and had much difficulty in removing the whole of it, it was certainly as well for them to know that by removing a certain portion of it they would secure as good results as if they removed the whole of it. To learn that fact alone, in his opinion, would well repay anyone for attending that meeting.

Mr. HUBAND said it was like old times listening to Professor Pritchard. In regard to scirrhous cord, it was quite a new idea to him that the result of operating in part would be followed by equally satisfactory results as if the operation was complete. He joined in the expression of thanks to Professor Pritchard for giving them the benefit of his long and varied experience.

Mr. GOOCH, who was next invited to take part in the discussion, said he had no criticism to offer upon Professor Pritchard's address, which had been a source of much interest to him.

Mr. BARLING was very much struck by what the Professor had said with respect to scirrhous cord. He himself had always endeavoured to get beyond the seat of the disease, otherwise he never thought he should be successful. He agreed with the Professor about the use of the knife, but he himself was most in favour of the actual cautery. There was no wound so healthy as that made by the cautery.

Mr. BLAKEWAY said he had been very much interested in listening to the address, but it occurred to him that it made them inclined to think the treatment of fistula was a very simple matter after all. As a matter of fact, however, there were few more tiresome cases to deal with. He thought few practitioners were anxious to treat poll-evil if they could avoid it, but if they did treat it, it was better to get the case in their own infirmary. He had always found that the best form of treatment was the free use of the knife. If they could feel the end of the sinus with their finger they would do well to put in a small plug of bichloride of mercury. Irrigation with cold water was what he also recommended. He was glad to hear Professor Pritchard allude to fistula of the ear. It constituted unsoundness, and unless a man was careful, it was possible for him to pass a horse as sound with a small fistula at the root of the ear. He was surprised to hear what the Professor said about the treatment of scirrhous cord. In operating upon it, he had certainly himself been of the opinion that he must get at the bottom—or rather the top—of the thing. If it could be successfully treated by removing a portion of it, they had the whole matter in a nut-shell.

Mr. GREEN said the form of fistula with which he was most cognisant was quittor, particularly in colliery horses. He was not blessed with the best of shoeing smiths, and pricks and other injuries did almost irreparable mischief. He could thoroughly bear out what Professor Pritchard had said about the use of the knife in the coronary band. He had operated upon a score or more pit horses during the last ten years, and he had been particularly bold in his treatment because they were not animals of great value. Where he had used the knife freely he had always had better results than when, in the cases of valuable horses, he had acted with greater caution. With regard to scirrhous cord, he had always been under the impression that the more substance he removed, the more successful he was likely to be, and that was the aim he always had in view. But he must say that at times, when he had been dissatisfied with his operation, and when he felt sure he had not removed everything, he had noticed the animal recover.

Mr. SMITH, who briefly took part in the discussion, said he had had several cases of scirrhous cord. He had sometimes not taken the whole of the matter away, but the cases had turned out all right.

The HON. SEC. said he wished to tender his sincere thanks to Professor Pritchard for the very instructive and able address he had favoured them with. He should like to know whether Professor Pritchard had had any experience in the internal treatment of weak iodide of potassium in cases of fistula. The method he usually adopted in cases of quittor was to syringe the sinus out with hot water and then inject a solution of bichloride of mercury, afterwards packing the sinus tightly with cotton wool and applying a blister to the coronet in three or four days time.

The CHAIRMAN also joined in the thanks to Professor Pritchard. He himself was a great believer in the knife and blister. Time forbade him continuing the discussion further.

Professor PRITCHARD replied. In reference to the surprise which his statement regarding the treatment of scirrhous cord had occasioned, he could not help smiling to himself at the remarks of Mr. Green. The latter said that operations which had not been satisfactory at the time had been attended with good results. That was exactly how he (Professor Pritchard) came to the conclusion that removing a portion was as effectual as removing the whole.

Mr. GOOCH exhibited a case of tooth instruments. A vote of thanks was accorded to him for his kindness in submitting them for inspection—proposed by Mr. Green and seconded by Mr. Malcolm.

A vote of thanks to Professor Pritchard for his address was passed, on the motion of Mr. Carless, Stafford; seconded by Mr. Malcolm.

A vote of thanks to Mr. Carless, Worcester, for taking the chair in the absence of the President, was also passed.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of the above was held at the Grand Hotel, Manchester, on Thursday, December 12th, 1895. Tea, 5 p.m. Business 6.30. Present: The President (W. Dacre, Esq.), in the chair; Messrs. Faulkner, Taylor, Carter, Edwards, Hughes, Munro, Stent, Lawson, Howe, Chorlton, Hopkin, Moore, Gubbins, Ackroyd, &c.

Upon the proposition of Mr. EDWARDS, seconded by Mr. MUNRO, the minutes of the last meeting were taken as read.

Election of Officers for 1896.

It was proposed by Mr. W. A. TAYLOR, and seconded by Mr. E. FAULKNER, and carried unanimously, that Mr. J. H. Carter, of Burnley, be President of the Association for the ensuing year.

It was proposed by Mr. W. A. Taylor, seconded by Mr. E. FAULKNER, and carried unanimously, that Mr. Howe, of Buxton, be a Vice-President for the ensuing year.

Proposed by Mr. E. FAULKNER, seconded by Mr. HOPKIN, and carried unanimously, that Mr. Hughes, of Oswestry, be a Vice-President for the ensuing year.

Proposed by Mr. E. FAULKNER, seconded by Mr. HOPKIN, and carried unanimously, that Mr. H. D. Chorlton be Secretary for the ensuing year.

Proposed by Mr. E. FAULKNER, seconded by Mr. Chorlton, and carried unanimously that Mr. J. B. Wolstenholme be Treasurer for 1896.

Mr. E. FAULKNER read a letter of the 23rd November, 1895, addressed to him by Professor Macqueen *re* Professional Combination.

It was proposed by Mr. HUGHES, seconded by Mr. HOWE, supported by

Mr. J. H. CARTER and carried unanimously that a committee of five members of the Association be appointed to consider Professor Macqueen's letter.

Messrs. E. Faulkner, J. H. Carter, W. A. Taylor, T. Hopkin, and H. D. Chorlton were appointed as the committee.

Mr. W. A. TAYLOR suggested in connection with the subject, which he thought affected every member of the Association, that the Committee should be empowered to have copies of Professor Macqueen's communication printed and circulated amongst the members of the Association between this and the next quarterly meeting or the annual meeting if they had to take action, so that every member might be in a position to consider the subject and be prepared to vote according to his ideas.

The PRESIDENT said he considered Mr. Taylor's proposition or suggestion was a fair one and he seconded it.

On being put to the meeting the proposition was carried unanimously.

Mr. A. MUNRO then read a communication on "Husk or Hoose in Cattle," describing fully his mode of operating on animals of varying ages, giving his treatment in several outbreaks of the disease in Cheshire and emphasising the fact of his having so much better results from the inter-tracheal injection of medicinal agents than when drugs given by the mouth had to be relied on or even when fumigation was had recourse to.

The PRESIDENT said Mr. Munro's paper was essentially a practical one, and to him was extremely interesting. He thought it ought to be followed by a good discussion.

Mr. HUGHES, of Oswestry, thanked Mr. Munro for his practical paper, especially for country practitioners, and he had no hesitation whatever in supporting his treatment as it was undoubtedly the most effectual.

Mr. CHORLTON thanked Mr. Munro for his paper, and said he could speak from having seen him operate on calves, that the inter-tracheal injection appeared to be fairly easy and efficacious.

Mr. CARTER regretted he could not offer anything to enlighten the members on the subject. It was a disease that he had had only one case of since he had been in Burnley (12 years). The treatment in Louth seemed to be similar to Mr. Munro's. He gave them (cattle) plenty of salt, and when recovering, allowed a liberal diet.

Mr. GUBBINS said he had only seen one outbreak.

Mr. EDWARDS upheld the turpentine remedy. He had not much faith in the inter-tracheal method, in fact, he had given it up altogether.

Mr. HOPKIN then gave a paper on Examination of Horses as to Soundness, treating the subject from a really practical point of view, and citing some very interesting cases that had come under his notice.

The PRESIDENT thanked Mr. Hopkin for his interesting paper, stating that he had taken them over a little new ground in the very old hackneyed subject. Although hackneyed, scarcely a week passed but something fresh was found in the matter. He thought the paper was worthy of a good discussion.

Mr. ALEC LAWSON expressed his indebtedness to Mr. Hopkin for his interesting paper. There had been a good deal of correspondence in the journals as to grunting. Was grunting unsoundness? It was a most difficult subject. His experience was that if a horse grunts from nervousness, which is a very different grunt, as Mr. Hopkin had told them, from that which arises from sore throat or from a continuous sore throat, which meant the long grunt next door to a roar, he certainly advised his clients to buy the horse, but should tell him what he had heard. As to stringhalt, if a horse had it, his experience was it always had it. He did not, as a rule, think anything of splints. A horse could scarcely be got without them. If you are to condemn splints, 98 horses out of every 100 would have to be condemned. With rest

and treatment, splints almost invariably got better, although some puzzling cases of splint lameness were found. Nothing but time would cure them. He was much obliged to Mr. Hopkin for the pleasant communication.

Mr. TAYLOR thanked Mr. Hopkin for the eloquent manner in which he introduced the subject. It was a patent fact to all observers that the majority of horses working in towns were unsound. The question was whether they were unsound when introduced to the veterinary surgeon. There were many phases in which the subject might be discussed. The principal question of the present time was that of grunting, and he certainly agreed to some extent with Mr. Hopkin, and to some extent with Mr. Lawson, that it depended on the nature of the grunt. If the grunt be slight and short, the animal not too high up on his legs (not above 15.3 or 16), it might perhaps be passed if sound in other respects. But if a deep sonorous grunt with an animal 16 making no noise in his galop, he certainly should not hesitate to reject it. Another matter in the examination of horses for wind and that was the cough; he noticed it was not the custom of some veterinary surgeons to apply pressure to the wind pipe in order to produce a cough. He invariably did this. If he had to certify, "Is the horse that is a grunter sound?" he should certainly say no, and would be justified in his remark. The difficulty was between practical soundness and local or technical soundness. As to stringhalt, he never remembered a case of this to ever disappear. He had seen it more or less evanescent, but he did not know that he ever saw a true case of stringhalt entirely disappear.

The PRESIDENT stated he certainly should not pass a grunter as a sound animal under any conditions whatever. He thonght all the members were indebted to Mr. Hopkin for his paper. He thought wind and hocks were probaby the chief things apart from disease of the heart and lungs. Intermittent whistling—this was a point the lecturer did not touch upon. He thanked him for the practical and lucid manner in which he had given his paper.

Mr. STENT referred to the teeth, and asked would a horse with a decayed tooth be called a sound animal.

The PRESIDENT said his views were somewhat peculiar, so far, in examinations, as that great bugbear, hocks, is concerned. He did not care how lumpy they were so long as they used them well. What had to be taken into consideration was what was the animal going to be used for. He thought a veterinary surgeon should give as bald an account of the soundness of an animal as possible. He believed the veterinary surgeon ought to go straight to the point and, doing his duty by the seller as well as the buyer, make a simple statement that the horse is sound or unsound. That was all that should be required. Indeed, if an opportunity presented itself, never give a certificate at all. With regard to coughs, in the examination as to soundness they were in 99 cases out of 100 indicative of the wind, and were indicative of the condition of the animal in regard to its being amiss, which should be particularly mentioned.

Mr. HOWE thanked Mr. Hopkin for the practical hints and advice he had given on the subject.

Mr. GUBBINS acknowledged his indebtedness to Mr. Hopkin for his excellent paper. If he heard a grunt, or at least anything in the wind, he always said the horse was unsound. Another point which he had great difficulty in deciding was the question of hocks.

Mr. HOPKIN: Splints:—It may be for six or twelve months before they were cured. He thought there was a little confusion in regard to stringhalt and shivering. He did not know that they were ever connected. The two diseases can occur in the same animal. Cough:—He liked to hear the cough. He would rather have a hock with a curb on than a bad hock without

one. Teeth.—If a veterinary surgeon passed a horse with a decayed molar, and it could not masticate, he was afraid he would have a bad case and would be mulcted in damages. He did not agree with the president's recommendation to not give a certificate at all. He thanked the members for the quite undeserved praise they gave him.

Mr. W. A. TAYLOR proposed a vote of thanks to the retiring officers.

Mr. LAWSON seconded.

Carried unanimously.

SOUTH DURHAM AND NORTH YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

A MEETING of this Association was held in the North-Eastern Hotel, Darlington, on Friday, December 6th, 1895, at 4 p.m., P. Snaith, Esq., in the chair. There were also present: Messrs. C. G. Hill, Geo. J. Harvey, and J. H. Taylor, Darlington; G. E. Gibson, Sedgefield; A. Neish and E. H. Pratt, Northallerton; W. Awde, Stockton-on-Tees, and Mr. Purves, a visitor.

A telegram was received from A. Peele, who was unable to attend through indisposition, and a letter from H. Snarry, regretting his inability to be present.

Mr. HILL proposed and Mr. TAYLOR seconded the confirmation of the minutes of the previous meeting. Carried.

A letter having been read from Mr. J. Nettelton, late of Northallerton, but now residing in London, tendering his resignation, it was proposed by Mr. GIBSON, seconded by Mr. HARVEY, and carried that the resignation be accepted with regret.

The SECRETARY reported that he had sent copies of the *Veterinary Record*, containing the account of the differences existing between the Board of Agriculture and the veterinary profession, to twenty members of parliament in the district. From a great number replies had been received of a favourable character, and promising that if the matter was brought before the House of Commons, they would support the veterinary profession to obtain a proper recognition of their services at the hands of the Board of Agriculture. Letters were also read from the Secretary of the Royal College of Veterinary Surgeons, stating that the Council had decided to accede to the wishes of the Scottish and other veterinary associations, and make representations to the Board of Agriculture with reference to the scheduling of tuberculosis in the Contagious Diseases Animals Act for the following purposes:—"(a) notification, (b) isolation of suspected animals, (c) slaughter of all clinically diseased animals; secondly, that means be taken for the veterinary inspection of dairy cows, with a view to guard against the transmission of tuberculosis to man." And from the Lincolnshire Veterinary Medical Association, asking for the opinion of the members as to whether "Grunting in Horses" constituted unsoundness. Several members contended that it was impossible to commit themselves to a general opinion, but that each case coming before them ought to be decided on its merits at the time of examination. Two or three gave it as their opinion that if a horse grunted, he was sure to develop "roaring" at a later period of his life if clear at that time.

Ultimately, on the proposition of Mr. SNAITH, seconded by Mr. HILL, it was decided that the letter be laid on the table for discussion at the next meeting. Carried.

A Committee, consisting of Messrs. P. Snaith, A. Peele, the Darlington Veterinary Surgeons, and the Secretary, were appointed after a certain matter had been discussed, to gain information, and to report from time to time to the Association the result of their deliberations.

Mr. C. G. HILL, M.R.C.V.S., Darlington, then read a paper on Castration by the Standing Operation, as follows:—

Mr. PRESIDENT AND GENTLEMEN,—

At the request of our worthy Secretary, and I must say at rather short notice, I consented to read this paper before you to-day. I certainly did so with a great amount of hesitation, but, thinking as a member of this Association it was my duty to do so, I hope you will pardon any shortcomings and the briefness of details; and if in any way I have contributed to the welfare of our meetings by this attempt, I shall feel that I have only done what every member of such associations ought to do. For some months past the veterinary records have been teeming with correspondence on what has been called the castration craze, under the heading of Anæsthetics v. The Standing Operation. A few have written favouring the latter, but a great many have condemned it.

The opponents of the Standing Operation have gone so far as to say that it is disgustingly cruel and painful, that it is an acrobatic performance. and that it is dangerous to both patient and operator. But one correspondent does not stop here; he states that it is a great cause of scirrhous cord. Scirrhous cord being due to a micro-organism, viz., the micro cœcus ascoformans, poor standing operator is credited with manufacturing organisms. Of all the adverse reasons this is the most absurd, as it is just as likely to occur, if not more so, in the cast subject. These gentlemen are in favour of the animal being cast and put under the influence of an anæsthetic, and the subject castrated by the method the operator is the most skilled in. I am afraid these unbelievers either have never tried the operation in the standing position, may not even have seen it performed, or they may have been unfortunate in their first attempt. The standing operators support their views by the following reasons: that it is the quickest, safest, requires least exertion, and the most humane method up to the present time we can adopt. The instruments used for the standing operations are the ordinary wood clams, serrated scissors, knife or the scraseur, and the Huish-Blake castrator. The only appliance used for defence is the twitch. I believe some use a safety rope; but this is not necessary.

As regards clams I will say very little, as I have only once used them. My objection to their use is that a second visit is compulsory in order to take off the clams, and it is far from being a scientific operation.

The ecraseur I have only used in the cast subject. With it I am afraid in the standing position there would be a tendency to drag on the cord if the animal should move very much. The instrument I use and find the most satisfactory is the Huish-Blake castrator. This instrument, having a great amount of crushing power, brings the hæmorrhage almost to a minimum, and acts immediately. My experience, perhaps, is rather small to that of my fellow-practitioners, for castration in this district is mainly carried on by quacks. This season I have operated on thirty horses, from one year to nine years old, in the standing position, and many calves and bulls with the Huish-Blake castrator.

My method of operating is as follows:—If the box is roomy and light I operate there; if not, I have the animal brought outside and have a twitch put on, one man holding the twitch. I then examine the scrotal region to ascertain that everything is normal. Then, with the Huish-Blake castrator and knife ready, I grasp the right testicle with the left hand from the near side, let out the testicle with a bold and deep incision, break down with my fingers the faschia between vascular and non-vascular portions of cord. In yearlings I cut the non-vascular with knife. In older animals I crush with the Huish-Blake castrator. My reason for doing so is to do away with any undue hæmorrhage that may occur from the artery of the cord, which in some cases is very well developed. Then leave the testicle hanging vertically by the vascular portion of cord, and do the same with the left testicle. After

this get hold of right testicle, pull it down, put on Huish-Blake castrator, taking care that the cutting edge is not next the scrotum. Close the blades with firm pressure, doing so for a few seconds. As a rule the testicle will drop; if it fails to do so, twist it off. Relax hold of handles gently and the cord will slip up. Remove the other in the same way. The only after-treatment I adopt is to bathe the part with an antiseptic solution. Keep the colt quiet for a few hours, and, if weather is favourable, turn him out, bringing him in at night for a week or two. But of the thirty horses thus operated on I had one case of secondary hæmorrhage forty-eight hours after the operation; it was very slight, and, after plugging scrotum, soon stopped. One colt died three weeks after operation. The report was set about that the animal bled to death. I attended a few hours before death; he was suffering from gastric tympany. I made a *post-mortem* and found ruptured stomach; all the other organs healthy; so I do not attribute this to the operation at all. All the rest did wonderfully well.

What I claim for this method is quickness, safety, humanity, less assistance required, and least pain given. I have castrated a six-years-old stallion under four minutes, so there was not much time for any acrobatic performance on my part. One man as a rule is sufficient, and this to a country practitioner is an important item; for how many times have you had to wait an hour or two for men to be gathered together to assist in the casting?

The horse during the operation shows very little evidence of pain, giving very slight resistance, no sweating, and after the operation will go straight to the manger and begin to eat. Respiration is in no way hurried. You don't get any stiffness nor straddling gait. In these days of keen competition, both fair and very much otherwise, we must look to ourselves and to our profession, and we are compelled to advance with the times.

In some parts of England and Ireland the farmers and owners of horses may be of a more generous and sympathetic turn of mind to what they are here in the North, and prefer their colts to be operated on under the influence of an anæsthetic and remunerate accordingly; but to my mind it is a mistaken idea. If they knew the after effects of chloroform as I know, they would not be so keen to administer it for so short an operation. I have been chloroformed twice, and each time for a week after I was sick, and to this day chloroform has a nauseous effect on me. I would rather suffer a few minutes pain to such ill effects. The only thing that can be said in favour of chloroform in this operation is that it looks a little more scientific and produces on the onlookers wonderment and awe; but in my opinion the after effect does not warrant its use and it increases the risk of the operation, besides the time spent in producing anæsthesia and bringing the subject round again, which sometimes is rather a difficult matter. Then again there is the expense of the drug used. The mere act of casting is a restraint to the horse and he fights against it, and by the time you fix on a chloroform muzzle he is covered with perspiration, and testing the strength of the ropes, and your assistants are panting with the exertion thus caused. If we pressed upon our clients the fact of operating on their colts under chloroform they would laugh at us and we would only increase the work of our unqualified opponents, so it behoves us to choose the method which we think is the most satisfactory to our patients, our clients, and to ourselves.

The standing operation meets all three. I do not mean to infer that all can be castrated in the standing position, but the majority can. Whether the animal be castrated standing or cast the Huish-Blake Castrator is the instrument of the day. It is instantaneous in its action and its great crushing power is sufficient to allay all undue hæmorrhage. Some veterinary surgeons include both vascular and non-vascular organs in the instrument together, but I think this is too great a strain on the Huish-Blake Castrator. I

have not seen any unpleasant symptoms in yearlings after cutting the posterior part of cord with the knife. I use Russel's knife for opening the scrotum. Mr. Huish was kind enough to send me some correspondence he had on the results of last season. Some veterinary surgeons have operated on as many as 250, and out of about 2,000 colts there were onlo only two deaths rsported, so this speaks very highly and these might have occurred if they had been operated on in any other way. We must be less conservative in our ideas, and not throw cold water on new methods until we have given them a tair trial.

Thanking you very kindly for your patient hearing to what I am afraid has not been very interesting, but I hope it will lead to a good and practical discussion.

In the discussion which followed,

Mr. NEISH stated that he had used chloroform for the last three years, but had observed no bad effects from its use. He had operated on colts standing and in the recumbent position, in the former by the ecraseur and in the latter by torsion. He preferred the recumbent position.

Mr. GIBSON stated that he had operated on a great number of colts in the standing position with the ecraseur. He put the colt's head to the rack, and gave the tail a hitch to the stall post. He thinks that there is not so much pain to the animal as by the other methods.

Mr. HARVEY related his experience of castrating by the standing operation for the first time, and said that he preferred to have them cast, but he thought at the present rate of pay for operating on colts in his neighbourhood, they ought to be cast and secured by the owner instead of the operator.

Mr. SWAITH thinks that chloroform is inadmissible unless it is specially requested by the owner of the animal, and he strongly objected to the use of wooden clams.

Mr. AWDE stated that he had seen two cart stallions, six and nine years old respectively, operated upon by the Huish-Blake Castrator by the essayist, and had come to the conclusion that it was by far the best mode of operating on animals which had been handled and least painful. In one case the animal never moved at all, although the only restraint upon him was the twitch, and the operation was completed in four minutes. In the other the horse backed about a yard, but otherwise never moved a muscle, nor showed any indication of distress in any way. Both cases did well, and there was very little swelling indeed.

Mr. HILL having replied, Mr. HARVEY proposed and Mr. GIBSON seconded a hearty vote of thanks to him for his kindness in providing the paper at such short notice, and for the discussion which it had supplied. Carried unanimously.

Mr. TAYLOR brought forward a splendid specimen, and related the history of the case, which was that of a mare which had been under his treatment, having fallen lame after coming off a journey on the near hind fetlock joint, which was enlarged. She had physic administered and a cooling lotion applied to the part for some time, but little or no improvement was manifest; so she was destroyed. The synovia in connection with the joint was blood-tinged, and there was extensive ulceration of the articular cartilage.

Mr. NEISH mentioned a case of suppurative cellulitis, and remarked on the intractability of such cases to treatment adopted, and asked for the views of the members present as to the best medicinal agents to employ.

Opinions differed, but sulphide of calcium was mentioned as a very useful agent to try in such cases.

W. AWDE, *Hon. Sec.*

LIST OF SUBSCRIBERS TO THE VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

James Clark	£0	10	6
J. Overed	0	10	6
T. A. Dollar	0	10	6
H. G. Rogers	0	10	6
W. J. Mulvey	0	10	6
T. G. Chesterman	0	10	6
J. C. James	0	10	6
G. C. Hunting	0	10	6
G. Hardie	0	10	6
Richard Reynolds	0	10	6
John Bell	0	10	6
W. Whittle	0	10	6
T. Simpson	0	10	6
W. Shipley	0	10	6
J. Freeman	0	10	6
W. Boots	0	10	6
P. Abson	0	10	6
R. C. Trigger	0	10	6
J. Reynolds	0	10	6
G. Rugg	0	10	6
F. G. Samson	0	10	6
A. L. Gibson	0	10	6
Henry Thompson	0	10	6
H. House	0	10	6
W. Carless	0	10	6
A. H. Farrow	0	10	6
W. Anderton	0	10	6
A. H. Jacobs	0	10	6
J. M. Axe	0	10	6
H. W. Caton	0	10	6
F. M. Wallis	0	10	6
E. Faulkner	0	10	6
A. J. McCallum	0	10	6
H. J. Goodall	0	10	6
F. Booth	0	10	6
W. H. Webb	0	10	6
J. B. Wolstenholme	0	10	6
A. S. McQueen	0	10	6
H. Hogben	0	10	6
S. Villar	0	10	6
C. Hartley	0	10	6
H. Olver	0	10	6
G. E. Bowman	0	10	6
James Rowe	0	10	6
W. P. Western	0	10	6
W. Bower	0	10	6
F. Danby	0	10	6
O. G. Barrow	0	10	6
C. W. Elam	0	10	6
J. M. Stewart	0	10	6
F. Dun	0	10	6
D. Charnock	0	10	6
J. Blencer	0	10	6
H. Snary	£0	10	6
C. H. Leach	0	10	6
F. Sheather	0	10	6
E. H. Gibbings	0	10	6
B. Russell	0	10	6
J. K. Caulderwood	0	10	6
E. J. Scrivens	0	10	6
W. Maynard & Son	1	0	0
F. Bowman	0	10	6
J. McKenna	1	11	6
A. M. Mason	0	10	6
L. Jones	0	10	6
B. Freer	0	10	6
W. Woods	0	10	6
H. R. Perrins	0	10	6
Samuel Lomas	1	11	6
E. Beddard	0	10	6
J. Storrar	0	10	6
W. Dobie	0	10	6
T. E. Augers	0	10	6
G. A. Banham	0	10	6
R. C. Edwards	0	10	6
Israel Trent	0	10	6
F. R. Stevens	0	10	6
E. Nuttall	0	10	6
J. H. Carter	0	10	6
J. S. Wheatcroft	0	10	6
J. L. Parr and C. Moir	1	1	0
T. Aubrey	0	10	6
J. J. Burchnall	0	10	6
J. Atcherley	1	11	6
P. Deighton	0	10	6
A. Over	0	10	6
Batt and Son	1	1	0
F. T. Stanley	0	10	6
A. L. Butters	0	10	6
Sir F. FitzWrygram	0	10	6
W. A. Field	0	10	6
W. H. Bloye	1	1	0
F. W. Wragg	0	10	6
J. B. Tutt	0	10	6
J. H. Hobson	0	10	6
R. H. Cartwright	0	10	6
T. D. Lambert	0	10	6
J. Woodger	0	10	6
S. Locke	0	10	6
H. D. Chorlton	0	10	6
J. S. Carter and Son	1	1	0
Joseph Hall	1	11	6
S. H. Slocock	1	11	6
T. Collins	0	10	6
J. Wright	0	10	6
A. Bate	0	10	6

G. Morgan	£0	10	6	Hugh C. Jagger	£1	10	6
H. J. Dawes	0	10	6	Trustees of the late Thomas Greaves ..	0	10	6
A. M'Cormack	0	10	6	James Brand	0	10	6
J. W. Edwards	1	11	6	H. G. Bowes	0	10	6
J. and A. Lawson	1	1	0	William Caudwell ..	0	10	6
E. W. Hoare	0	10	6	E. D. Johnson	0	10	6
T. Hopkin	0	10	6	F. H. Ridler	0	10	6
P. Taylor and Son	1	1	0	F. B. Jones	0	10	6
S. Jackson	0	10	6	C. Morgan	0	10	6
T. A. Frost	0	10	6	J. L. Barling	0	10	6
W. H. Ferguson	0	10	6	T. W. Kendall	0	10	6
A. Munro	1	11	6	J. E. Kitchen	0	10	6
H. Gray	1	11	6	Ball and Son	1	1	0
P. Perkins	0	10	6				
H. G. Bowes	1	1	0				
James Brand	1	1	0		£85	9	6

January 11th, 1896.

ALFRED H. POWNALL, JNO. B. WOLSTENHOLME, } *Auditors.*

CONTAGIOUS DISEASES ANIMALS ACT, 1894.

SUMMARY OF RETURNS, for the three weeks ending January 18th, 1896.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Anthrax.	Glanders and Farcy.	Rabies.	Foot-and-Mouth Disease.
None	Outbreaks 349 Slaughtered, diseased, or exposed to infection 5010	Outbreaks reported 30 Animals attacked 68	Outbreaks reported 43 Animals attacked 68	Cases Reported— Dogs ... 38 Other animals ... 2 Destroyed, as having been exposed to infection 25	None

SCOTLAND.

None	Outbreaks 8 Slaughtered, diseased, or exposed to infection 390	Outbreaks reported 10 Animals attacked 19	Outbreaks reported 2 Animals attacked 7	None	None.

IRELAND.

None	Outbreaks 46 Slaughtered, diseased, or exposed to infection 300	None	None	Dogs ... 31 Other animals ... 5 Destroyed, as having been exposed to infection 54	None

THE OUTBREAK OF GLANDERS AT BIRCH COPPICE COLLIERY, HALL END, POLESWORTH.

IT will be remembered that on the 2nd December last, four horses were found to be affected with glanders by Mr. Olver, F.R.C.V.S., of Tamworth. This fact was reported to the Warwickshire local authority, and Mr. Ison, of Atherstone, the veterinary inspector of the district, having confirmed the outbreak, the animals were then slaughtered by order of the authority. Subsequently, Mr. Olver tested with "mallein" sixty-one animals at the colliery, the result of which proved that nineteen animals which had been in contact with those already slaughtered were also affected. The nineteen were accordingly slaughtered by order of the authority, several others remaining under suspicion. On December 26th Mr. Olver inoculated with "mallein" the whole of the remaining horses above and below ground, numbering 79, which proved 10 to be affected, and these were slaughtered on the 30th, together with sixteen others which had been exhibiting suspicious signs of having the disease. The last test of "mallein" showed the horses in the seven-foot colliery to be quite clear, and only those that were first under suspicion to be actually diseased. It is hoped that the stringent measures adopted will thoroughly eradicate the malady. Thirty-three animals in all were slaughtered as being affected with glanders, for which one-fourth value, as compensation, has to be paid by the Warwickshire local authority, amounting to £141. For the remaining sixteen, which were ordered to be slaughtered under suspicion, compensation has to be paid to the amount of £262, being the full value. The outbreak has been a very serious matter for the proprietors of the colliery, inasmuch as the works have had to be stopped for some portion of the time, and the men have consequently not been fully employed.—*Tamworth Herald*, Jan. 4th.

SIR T. GIBSON-CARMICHAEL, M.P., ON TUBERCULOSIS.

A MEETING of the Galashiels Farmers' Club was held in Maxwell's Hotel, Galashiels, for the purpose of hearing a paper by Sir Thomas D. Gibson-Carmichael, M.P., on "Tuberculosis and the Tuberculin Treatment." Mr. John Scott, of Gala, presided, and there was a good attendance of members.

Sir THOMAS GIBSON-CARMICHAEL, in giving the results of his own experience of tuberculosis among his herd, said he was a thorough believer in the reliableness of Koch's tuberculin test; for, although it might not act as a cure for the disease, there was not the slightest doubt that it was a test of the existence of tuberculosis in any subject to which it was applied. A year ago he had determined to apply the test to his herd, and his overseer (Mr. Wilson) tested all the animals which he had purchased and all the cattle of his own or his father's breeding above a year old. Describing his method of carrying out the experiments, he said he first took the normal temperature of the animal, and then injected tuberculin. Six hours afterwards he took its temperature, and he continued to take it every three hours until the expiry of eighteen hours, by which time they would know whether the animal was tuberculous or not. He showed by means of charts relating to animals which had been experimented with that the temperature never rose to any appreciable extent above the normal when the cattle were healthy, and when they were tuberculous there was a sudden and rapid rise of temperature. As an example of what a non-tuberculous animal should be, he gave the results of an experiment with an Ayrshire cow, which under the test gave the highest temperature of 103·4 and the lowest at 102·7. Another cow, which was to be killed the following day, began at 101 and rose to 107, and he was certain that the animal when

slaughtered would be found to be highly tuberculous. Having given similar illustrations with regard to Ayrshire and cross cows, to prove the accuracy of the tuberculin test on animals in his own herd to which it had been applied, and which, on being slaughtered invariably showed the existence of tnberculosis, Sir Thomas said there was a feeling in the Lanark district that the disease was only to be found among black cattle, but his experience was that there was far more tuberculosis among Ayrshires and non-pedigree cattle than among Aberdeen-Angus cattle. The result of all his tests with black polls showed that rather less than 6¼ per cent. were tubercular, while more than 50 per cent. of the Ayrshires were affected; but in this connection he had to say that the whole of his original herd at Castle Craig was clear. Of Ayrshire and short-horn crosses only one was tested, and it was tubercular; one Kerry cow was tested, and it was tubercular; and a cross Kerry, which was tested, was found to be free. Proceeding to give the results of experiments with Aberdeen-Angus cattle, Sir Thomas said that last March his overseer wrote him that of fourteen cows, eleven were bad and three doubtful. The eleven affected cows were those of which he had formed the highest hopes, as they were the most promising, had been the most costly, and from which he had expected the best results in the showyard. He had been struck with the fact that not a single one of the affected animals had been bred at Castle Craig, all his own animals having come through the test satisfactorily, which made him think that his own "doddies" were not so inferior as he had thought. He had also observed that the animals brought from a particular place, and possessing certain strains of blood, were rather worse than the others. Another matter worthy of notice was that the animals which were worst were those which were smallest round the heart, and he therefore thought they should produce cattle as deep as possible round the heart. Most of the affected cows had been suckling calves, and, in considering what he should do with those calves, he looked at his figures and found that, after all, the calves need not necessarily be tuberculous because their mothers were. The temperature of one cow rose, under the test, from 100 to 106·9, which, he thought, was a very bad case. One of her offspring was a two-year-old bull, which showed as level a temperature as could be desired, and no sign of tuberculosis. The daughter of the cow, however, was tubercular, and she in turn had a daughter, which was thus descended from two tubercular cows, and yet showed a healthy result. He had also found that the animals which were most closely confined were the worst, and those that were most in the open air were the best. He had decided that those dams showing a temperature of over 105 should be killed, and those under that temperatnre should have their calves taken away from them and be entirely isolated. Some of the animals had been sold while he was abroad, but no complaints had been made about them, so that they could not have been very bad, But there were two which were especially bad, one of them being a cow for which he had paid more than for any cow he had ever bought, and her temperature jumped up from 103 to 107 in five hours. The important thing for him was to see that his bulls for breeding purposes were clear, and he had satisfied himself that they gave an equable temperature. In future, all his animals would be sold with a warranty, for he was not going to sell any beast without letting the buyer know that it was free from tuberculosis; and he would further refuse to sell any animal whose dam had shown any sign of reaction without the purchaser knowing it. A fortnight ago he had tested the whole of his own and his brother's herds, together with the cattle kept by his ploughmen and shepherds, and he found that only two which were clear in March last were now affected. He had retested all the bull and heifer calves, with the result that they showed good lines of temperature. He

had ascertained this important fact, that he had nine calves, the offspring of cows which on 7th of March were tubercular, and which were perfectly healthy as far as he could judge from the tuberculin test. He had also tested two two-year-old heifers, one of them the daughter of a very bad cow, and they were quite clear of the disease. He had altogether fifteen animals in his herd sprung from tubercular dams, and which were at present free from tuberculosis. He regarded that as a most hopeful result of the experiments which he had carried out. His experience, therefore, tended to show that by suckling tubercular cows it did not necessarily follow that the offspring would become tuberculous. Another point brought out was that it was a quick rise in temperature which showed virulence in the disease, and that when the rise was not so rapid, the affected animal was not past usefulness. If they were to legislate on this matter in a hurry, they might do something to reduce farmers' profits, but if there was going to be legislation, it was not likely to come because farmers wished their animals protected, but because those in the towns found that their families were in danger of tuberculosis. He thought cattle-breeders should do their best to see that their herds were in a healthy condition. For himself, he had only two animals with which the most drastic legislation could interfere, and he should like that everybody else was in the same position. If the Government did step in to test cattle he hoped they would insist on the animals being branded, for he believed that at present cows were sold to supply dairies which were parted with because they were tubercular. He thought it a pity that the entire carcase of an animal affected with tuberculosis should be condemned, because he believed the meat of tubercular animals might very well be eaten if the worst portions were destroyed; but as regarded the milk of tubercular cows, he did not think it should be consumed.

On the motion of the CHAIRMAN a hearty vote of thanks was awarded to Sir Thomas Gibson Carmichael for his interesting and instructive address, and his health was cordially pledged.

THE CÆSARIAN OPERATION IN THE COW.

BY A. BABB, A.B., M.D.C., SPRINGFIELD, MO.

THE operation of gastro-hysterotomy is fraught with so much gravity that it is justly employed only as a *dernier ressort*, and, consequently, the cases in a general practice, where it is clearly indicated, are comparatively rare. The general lack of aseptic surroundings in the barns and stables of our domestic animals, complicate the after treatment, and their small pecuniary values decrease the number of visits of the surgeon. Both these factors still further reduce the chances of recovery to a minimum.

About six o'clock on the sixth of last April, a gentleman hastened into my office, and told me that a fine, red cow, belonging to Mr. T., at the corner of Twelfth and Laurel Streets, had been in labour since morning.

My aid having been requested, it took but a few minutes to place the usual obstetrical outfit in the buggy and repair to the scene of action. A glance told me that my bovine sufferer was well nigh exhausted, and a moment more, that her throes were very forcible and very frequent. Her owner informed me that this was her seventh calf, that she had had vigorous expulsive efforts since morning, and that he was at a loss to see why the trouble should occur. After hastily doffing my suit and donning apparel appropriate to such cases, an examination was made at once. Barring a partial prolapse of the vagina, everything normal till the os uteri was reached: it was so indurated as to exclude the introduction of as much as the smallest finger—in fact, complete atresia seemed to be present.

The owner was apprised of the situation, informed that the calf could be

saved by the Cæsarian operation, but a decidedly unfavourable prognosis given for the cow. He was urged that if he did not have her treated in this way to dispatch her at once in order to end her misery. He decided to have me try to save both cow and calf. Considering that I had everything to gain and nothing to lose, and being affected with an itching for the knife in such a novel case—a veritable tomomania—I readily consented. As he prized the cow highly, we soon agreed on a fee.

I informed him that at such serious undertakings it was customary to have another member of my profession present to assist, but he objected on account of the extra expense, and stating that he would do anything requested of him to aid me. I told him to wash his hands very clean in warm, carbolized water while I did likewise, and proceeded to prepare the necessary sutures, needles, scalpels, artery forceps, etc.

The patient was secured much quicker than the method can be related, for she was lying on her left side in a small shed or stall, too weak to rise or to make any formidable resistance. In short, all the appliance used was but a common bull-leader introduced into her nostrils, and held by one of his neighbours in such a way as to throw her nose into a perpendicular direction with the weight of her head resting on her horns.

Two ounces of the tincture of opium, more as a stimulant than as an anodyne, was exhibited. The hair was clipped over the appropriate parts and the space washed with a solution of that comparatively unpopular, but extremely useful antiseptic—carbolic acid.

The laparotomy was performed in this manner: commencing about four inches before the anterior angle of the ilium, a free incision was made about fourteen inches downward, angling a little forward; the first stroke of the knife "laid off the land," as a farmer-boy accustomed to ploughing would doubtless express it, for it severed the dermal covering and part of the subcutaneous tissues; the next two came down to the peritoneum, but here a pause was made to apply artery forceps to a couple of small vessels and to sponge off the parts. The hæmorrhage was not extensive and soon subsided; the peritoneum was then divided, and the gravid uterus brought from beneath the intestinal mass, which was held back in the abdominal cavity by my untrained assistant. A twelve inch incision into it enabled me readily to extricate a nice, large, red heifer calf, which showed its appreciation of liberty by repeated kicks and efforts to stand up.

The secundines were then removed, but not before the placenta was severed from each maternal cotyledon by careful manipulations. The wound in the uterus was diligently cleansed and stitched up with fine surgeon's silk—my spools of carbolised catgut being at the hospital and time was too urgent to wait till they could be brought. The womb was then replaced beneath the other viscera, a few blood clots removed from the abdominal cavity and the latter sponged out. Inserting strong sutures into the edges of the great, gaping, outside wound and dressing it completed the operation; most of the work having been done by the light of one dim, flickering. lantern.

Many times have I wondered why our cousins, the M.D's, do not have even a greater per cent. of their patients in major surgery recover, for most of the cutting is done in a strictly aseptic room, on a subject carefully prepared by diet, and rendered immobile by complete anæsthesia and one which would readily heal by first intention. The minute after-attention by trained nurses is also in strong contrast to the gross neglect to which our dumb friends are often subjected.

The next thing in order, to resume my former topic—the cow in question—was the introduction of two sutures through the labia vulval. This having been done, and another dose of laudanum having been administered, I left her for the night.

At my call the next morning she was up, was much brighter in appearance, and had drank about sixteen quarts of gruel made of warm water, shipstuff and oil-meal. Her temperature was 100 degrees, and pulse 90 per minute. The further treatment consisted in the use of stimulants, tonics, and anti-phlogistic agents with solutions of carbolic acid three per cent., or of mercury perchloride, one part to 1,000, as a detergent to the local injury. At no time did the fever exceed three and a half degrees, though for a few days partial anorexia and adipsia were manifest. The peritoneal edge of the wound healed without suppuration and the rest of it by granulation.

She gave enough milk all the time to nourish the calf, and finally furnished an abundance of it for other uses. I saw both on the 17th inst.

The calf is fat and saucy. The cow is still giving a good flow of milk and one has to hunt carefully in her flank to discover any trace of her former trouble.

Of course the owner is abundantly satisfied. The work brought me a little money and perhaps a greater value in reputation—*reputation*, which the physician, as well as the immortal Shakespeare well knows, is "oft got without merit and lost without deserving."—*American Veterinary Review.*

TREATMENT OF TETANUS WITH OXYGENATED WATER—RECOVERY.

By Mr. G. Causse.

This form of treatment, already recommended by Mr. Aureggio, who had already obtained favourable results in two cases of that affection, was put in practice upon an animal, a mare, eight years old, of nervous disposition, which was suffering from an attack of traumatic lockjaw resulting from a punctured wound of the right hind foot received some two weeks previous. The treatment, the first day, was begun with twelve subcutaneous injections of oxygenated water with a syringe of five grammes, six injections on each side of the neck, and combined with mustard frictions on the throat and the masseter muscles, and forty grammes of chloral in rectal injections; heavy blanketings: nitrated watery mashes. The subcutaneous injections on the second day were increased to fourteen and kept up for ten days with little modification, and on towards the tenth day the number of injections seemed to be followed by a marked improvement,

On the following morning a severe relapse manifests itself, which is supposed to be due to the reduction of the oxygenated water. One hundred and fifty grammes are then injected by fifteen injections in the morning and the same quantity given again in the evening, with the addition to the general treatment of 24 grammes of tartar emetic.

THE MICROBE OF DISTEMPER OF DOGS.

BY DR. BRUNO GALLI-VALERIO.

After a careful, but brief consideration of what has been written on this interesting subject, and a claim to priority on the discovery of the microbe in the central nervous system, the author comes to the conclusion that, first, in the young animals affected, one always finds in the lungs and the central nervous system an ovoid bacillus, whose dimensions vary between 1.25 and 2.5μ in length upon 0.31μ in width; second, this microbe gives characteristic cultures upon gelatine at 18° to 20°, and upon gelosis at 38° to 40°; first, the inoculation of these cultures in veins, under the skin, and in the lungs of old dogs, has not given rise to the symptoms of the disease in young animals; fourth, the inoculation of a culture with brain substance under the skin of a five or six-months-old dog, has produced the disease of the young and—important fact—with the characteristic pulmonary and cerebro-spinal symptoms.—*Jour. of Zootech.*

PATHOLOGY OF VACCINIA AND VARIOLA.

BY S. MONKTON COPEMAN, M.A., M.D.CANTAB, M.R.C.P.,

Lecturer on Hygiene and Public Health, Westminster Hospital Medical School.

In my former paper, I stated that the problem has been attacked from two separate points of view:—1. Experimental work having for its object the production—if that be possible—in the bovine animal, by inoculating it with small-pox lymph, of a disease indistinguishable both in its immediate local and in its subsequent general effects, from true vaccinia. 2. Microscopic pathology and bacteriology, including, I may add, the testing of bacteria derived from lymph, also on the bovine animal.

With reference to the first point, I was able to show that of the various observers who at different times have worked at this branch of the subject (among whom, of those now living, King, Simpson, Hime, Voigt, Fischer, Haccius, and Eternod, may be mentioned), all, with the exception of Chauveau, and his colleagues of the Lyons Commission, claim to have obtained positive results, in a certain number of their experiments, at any rate, as regard the production of typical vaccinia, after one or more removes, as the result of variolation of the cow or calf. In many cases, it is true, a long number of experiments have been abortive, especially among the older observers, who made use, for the most part, of heifers or milch cows. Subsequent experience has shown, however, that success is much more likely to be obtained if, instead of heifers or cows, calves be used. On this account, perhaps, Chauveau's want of success may be, in part, explained.

With reference to recent experiments on variolation of the calf, it is worthy of note also that different observers have obtained local effects in that animal, which in different calves of a series have varied considerably. The final result has, however, after a greater or less number of removes from calf to calf been invariably the same, the production, namely, of a local vesicle indistinguishable by any means at our command, such as the appearance and course thereof, or the protective power of the lymph derived therefrom, from true vaccinia.

As far as I am aware, the most recent experiments of this nature which have been carried out are those of Dr. Klein and myself, the results of which have been published in full in the reports of the medical officer to the Local Government Board and in the *Journal of Pathology and Bacteriology* respectively. I do not, therefore, propose on the present occasion to refer to those experiments in detail, but I may perhaps add that, in my own experience at any rate, no question of possible contamination with vaccinia can possibly arise, seeing that all my work was conducted at the Brown Institution, that as a special precaution new scalpels were used, which were invariably first sterilised in a flame; that before and after use the table was thoroughly washed with carbolic acid and water, and during the intervals of use kept exposed to the open air.

As the result of all the work which has been done in this direction, there can, I think, at the present time, be no reasonable doubt as to the possibility of inoculating the calf with variolous matter with the result of producing thereby after one or more removes of a malady which is certainly no longer small-pox as ordinarily understood, seeing that it has now completely lost, when transferred to the human being, its original property of infectiousness. Although this is so, it is nevertheless capable of affording protection, just as vaccinia does, against subsequent vaccination or variolation. In this connection I may perhaps refer to certain experiments of mine on the monkey, which showed that not only is this animal susceptible to inoculation of vaccinia, which runs a course similar to that which is observed in the human being and the calf, but it is equally susceptible to the inoculation of variola.

Furthermore, in the case of the monkey, small-pox lymph and vaccine, either human or bovine, appear to possess mutually protective power one against either of the others.

Turning next to the micropathology and bacteriology of variolous and more especially of vaccine lymph, I was able to bring forward certain evidence bearing on the important subject of the storage and preservation of vaccine lymph, as also on the relationship of variola and vaccinia, so far as microscopic and bacterioscopic examination of lymph can help us. These two subjects I desire particularly to consider on the present occasion.

It is a matter of common knowledge that vaccine lymph, whether stored in the liquid state or freshly obtained from a normal vesicle, usually is found when examined bacterioscopically to contain micro-organisms of various kinds, which have been shown by Crookshank, myself, and by other observers to be for the most part mere saphrophytes. To these, therefore, I have applied the term "extraneous." The practically universal occurrence of these saphrophytic organisms in vaccine lymph, along with chance of superaddition during or after vaccination, of pathogenic organisms by agency of careless people, whether vaccinators or persons having charge of infants, have been advanced as reasons for doing away with the practice of vaccination on the grounds of the possible harmfulness of the extraneous organisms liable to be introduced into the system at the time or in the course of vaccination. This argument, however, so far as the microbes usually intimately associated with lymph are concerned, loses whatever weight originally attached to it, since I have been enabled to show that by thoroughly incorporating a certain amount of chemically pure glycerine with the lymph, and afterwards storing the mixture for a time prior to use, all the ordinary saprophytes found associated with lymph are completely destroyed, as is shown by the fact that no growth arises in any of the ordinary culture media inoculated with such glycerinated lymph. This statement applies equally to the streptococcus of erysipelas, which has on occasion got admission to vaccine lymph. With reference to possible transmissions of syphilis and tuberculosis by the calf lymph, I need say nothing, seeing that it is universally admitted that the first of these two diseases is not transmissible to the calf, and that the bacillus of tuberculosis has never been discovered in vaccine lymph, bovine or human.

In glycerinated lymph we have therefore a preparation which, while even more active as vaccine than the original lymph, can, to the best of my belief, be produced absolutely free from the "extraneous" organisms which at one time or another have been isolated from fresh or stored lymph, with the possible solitary exception of *bacillus subtilis*, which, however, possesses no pathogenic properties. This statement, if it rested on my own authority alone, might, no doubt, be received with hesitation; but, seeing that since I first published in the "Transactions of the Congress of Hygiene" in 1891 the experiments on which it is based, ample corroboration has been afforded by the fact that other observers, including Chambon, Ménard, and Straus in France, Leoni in Italy, and Klein in England, have arrived at similar results. In consequence, no doubt, of the apparent impossibility which existed until recently of isolating any bacterium from vaccine lymph which could be regarded as specific to vaccinia, several observers have sought to prove that organisms of a somewhat higher order than bacteria might be concerned in the production of this malady and also of variola. In this connection it may be mentioned that bodies believed to be of the nature of psorosperms or sporozoa have been described as existing in the vaccine vesicle by Guarnieri and Pfeiffer on the Continent, and by Ruffer and Jackson Clarke in this country; but as to this I was taken to task last year by Ruffer for mentioning the organisms described by Guarnieri and himself in the

same category with those, the occurrence of which had been put on record by Pfeiffer and Jackson Clarke. As, however, the last named gentleman is to bring forward a paper giving the result of his researches, I do not propose to deal further with this subject on the present occasion except to put on record the joint opinion of Dr. Klein and myself to the effect that whatever may be the exact nature of these so-called sporozoa, they have not yet been proved to have any casual relationship with the diseases in question.

On the other hand, as I stated last year, Dr. Klein and I have concurrently, though quite independently, shown that in specially-stained specimens of vaccine lymph, taken at a period antecedent to full maturity of the vesicles, minute bacilli can be demonstrated, often in considerable numbers, and in practicaly pure culture. These bacilli cannot be found, or only with difficulty, in mature lymph, for the reason probably that they have by then given place to spores.

For some time it appeared impossible to obtain further evidence as to the *rôle* of these bacilli, as they altogether refused to grow on any of the ordinary culture media, and under either aërobic or anaërobic conditions, though this very fact obviously tends to show that they are not of a merely saprophytic nature. During the past year, however, certain experiments which I have devised, appear to prove that it is possible to obtain a growth of these bacilli in a particular culture medium, and even to carry on such growth in secondary cultivation. The experiments which have been instituted in this direction are at present but few in number, and it is quite evident that the exact conditions essential to success have yet to be determined, but, nevertheless, I think that the subject is of sufficient interest to justify me in bringing to your notice the results that so far I have obtained in this sense.

As it seemed to me, the desideratum for the purpose of inducing growth of the supposititious micro-organisms was a medium which had not been artificially sterilised, which *a priori* should afford the necessary pabulum, and which at the same time, whether it was to be considered aërobic or anaërobic, was secure in its circumstances against contamination. Hence the choice appeared to lie between the intraperitoneal fluids of one or another living animal and the hen's egg, which has already been made use of as an alternative culture medium.

As regards intraperitoneal fluid I foresaw difficulty, in that it is apt to contain leucocytes, which might easily vitiate experiment, and accordingly I adopted the hen's egg as a matter of first instance. I had no experience to guide me as to the best method of carrying out the inoculation of the egg, or as to the period of incubation best suited for the object I had in view, and my attempts for a time, therefore, met with small success. My inoculations were carried out by first cleansing the surface of the egg with corrosive sublimate solution and afterwards with alcohol, and then breaking a small hole in the shell by means of a sterilised needle and forceps. Through the opening thus made, I mixed the yolk and albumen of the egg by means of a platinum needle, and then carried out the inoculation by means of a glass capillary pipette, which had recently been drawn out in the blow-pipe flame. For the purpose of such inoculations I employed variolous crusts obtained from the small-pox ships of the Metropolitan Asylums Board. These crusts were rubbed up in a small glass mortar with a minimal quantity of sterilised normal saline solution. Of the resulting creamy emulsion a drop or two was then taken up into the glass pipette and the inoculation carried out. Finally, the small hole in the egg was closed up, either by means of a small pledget of sterilised cotton-wool soaked in collodion or with melted sealing wax. The eggs inoculated in this manner were then placed on beds of cotton wool and kept in the incubator at a temperature of 37°C. Here they were left for varying periods of time, a

month being the period which was eventually found to be that which was most desirable.

On opening an egg thus treated I found that in its interior was contained a creamy material, which in great part had replaced the ordinary egg contents. This material examined in coverglass specimens appeared to contain a pure culture of one organism only, namely, a bacillus which morphologically was not to be distinguished from the bacillus which I have previously described as to be found in early vaccine lymph.

My next step was to attempt to grow it in subculture and to make observations also of the effect of its direct transference by cutaneous inoculation into the calf. As regards attempts at subculture in all the media most usually employed for such a purpose, including gelatine, sugar gelatine, agar, glycerine agar, sugar agar, and serum, these failed as subculture of the bacilli contained in vaccine lymph had always failed when the ordinary culture media are adopted, but with the calf it was different.

Calf Experiments.

Experiment I.—On March 26th, 1895, Calf A was inoculated by eighteen incisions (fifteen on the abdomen and three on the scrotum) with a small quantity of the creamy emulsion contained in egg No. 5, which had been incubated for one month after inoculation with small-pox crusts, as already described. On March 30th scrapings were taken from the vesicular points which had appeared in the line of two of the abdominal incisions, and also from one of the incisions on the scrotum which had become slightly raised and red. With material thus obtained calf B. was on the same day inoculated by six linear incisions on a specially shaved area on the abdomen. Three incisions were inoculated with scrapings taken from the vesicular points, and three with scrapings from the incision on the scrotum of calf A. Three days later (on April 2nd) all six insertions appeared to be taking, though eventually one died away. On April 4th the calf was photographed, and on the same day a child was vaccinated from it by Dr. Cory. This child I have since seen. It has five good marks, and the mother told me that the vaccination "did splendidly," and that she had had no trouble with the child.

Experiment II.—On March 30th, 1895, calf C was inoculated on the right thigh in twenty-four insertions with emulsion from egg No. 5, which had been kept in a pipette since the first calf of the series was done. By April 2nd three small vesicular points had appeared in the line in as many of the incisions. With scrapings of these I vaccinated myself, and Dr. Cory vaccinated a child, aged three months. The process in my own case had aborted by the fourth day, but the child "took" quite normally, and had, when inspected on the eighth day, five good vesicles with very little areola.

On April 2nd, also, calf D was inoculated from the small vesicles on calf C in ten incisions on a special area of the abdomen. These all showed, on the fifth day, vesicles not to be distinguished from those of like age arising from the use of current lymph on the same animal.

Experiment III.—On May 7th, 1895, calf E was inoculated on a special shaved portion of the abdomen, in 12 incisions from contents of egg No. 5, taken from a pipette on the previous day. On May 14th six small vesicles, which had appeared in as many of the lines of incision, were clamped and scraped, and the material thus obtained was employed on the same date for the inoculation of calf F in twelve insertions. On May 18th six of these insertions had taken well. On May 21st eleven out of these twelve insertions showed a wide crust surrounded by a vesicular ring. The width of the crust was apparently due to the calf having been able to lick the places, as its collar had been removed by mistake on May 18th. Two of the more

markedly vesicular of these "places" were clamped and scraped, and with the material thus obtained calf G was inoculated by twenty insertions on a special area of the abdomen.

By May 28th all the twenty insertions made had "taken," and no appreciable difference could be distinguished between the vesicles which had arisen on the site of these incisions, and on those which at the same date had been inoculated with current lymph. This calf was twice photographed by Mr. Kent.

From calf G calf H was inoculated on May 25th; and, further, this strain of variola vaccine, derived in the first instance from the egg culture, was carried on through two additional removes in the calf, after which it was not further cultivated.

On May 28th, 1895, lymph taken from vesicles at the third remove from the egg culture, were in my absence employed by Dr. Cory for the vaccination of a large number of children at the Animal Vaccine Establishment, owing to the fact that for some reason or other the current strain of lymph had failed to give good results in the two calves which had been vaccinated according to the usual routine. All these children showed excellent marks when inspected a week later, and several of them were photographed by Mr. Kent.—*The British Medical Journal.*

FOWL DIPHTHERIA AND PUBLIC HEALTH.

BY J. LAWRENCE-HAMILTON, M.R.C.S.

AMONG the many magnificent up-to-date industrial monographs published by the Bureau of Animal Industry—one of the most useful branches of the U.S. Department of Agriculture—the exhaustive 1895 treatise on the Infectious Diseases of Poultry is specially worthy of attentive study by poultry breeders and hygienists.

This book is artistically illustrated with numerous original plain and coloured bacteriological and pathological plates, admirably arranged by Drs. Theobold Smith and Veranus Moore, who have had the great advantage of working under the expert direction of Dr. D. E. Salmon, the chief of the Bureau of Animal Industry.

It may be well to recall the summing up of the relationship of fowl diphtheria to public health, as expressed by Drs. Theobold Smith and Veranus Moore in the following extract:—

"A comparison of the bacillus of diphtheria in man (Klebs-Lœffler) with the one described by Lœffler as the cause of diphtheria in fowls, shows that morphologically and in their pathogenesis for experimental animals, the two organisms are in no way alike. There is also a marked difference in the nature of the exudates in fowls and in man. The non-identity of these diseases has been clearly pointed out by Ménard (*Revue d'Hygiene.* tome XII. (1890), p. 410). Although these diseases are shown by several observations to be unlike in their etiology and the character of their lesions, the transmission of fowl diphtheria to the human species, and *vice versa*, is affirmed by several writers.

"Gerhardt (*Revue f. Thierheilkunde u. Viehzucht*, Bd. VI. (1883), p. 180) reports four cases of diphtheria among six workmen who had charge of several thousand fowls, many of which died of diphtheria, in Wesselhausen, Baden. There were no other cases of diphtheria in the neighbourhood, and the evidence was quite conclusive that the disease was contracted from the affected fowls. It is also stated that an island on the north-eastern coast of Greece had been free from diphtheria for at least one-third of a century, when a dozen turkeys, several of which were diseased, were introduced. Soon afterwards diphtheria appeared in a house near the garden where the turkeys

were kept. The disease became epidemic on the island, causing the death of 36 people, or over 40 per cent. of those attacked.

"Debrie (reviewed in *Centralblatt f. Bakteriologie*, Bd. XIII. (1893), p. 730) reports briefly the clinical history of six cases of diphtheria which occurred in the garrison of Sebdou, and states that while the sixth case (two were fatal) was still under treatment in the hospital, ten fowls kept in a house not far from the hospital were attacked with diphtheria, and exhibited symptoms strikingly like those present in the human beings. Five of the ten fowls died, and two heads were sent to Arloing, who confirmed the diagnosis of fowl diphtheria. The fowls were fed by a hospital attendant, and it was ascertained that an identical outbreak had occurred among the fowls at a neighbouring place, from which one of the six cases of human diphtheria had been brought. Debrie is inclined to the view that human diphtheria is transmissible to fowls, and fowl diphtheria to man.

"Cole (*Archives of Pediatrics*, XI. (1894), p. 381) reports an interesting case near Jacksonville, Ill. A flock of fowls became affected with a disease characterized by an exudate on the mucosa of the head. Some of the exudates emitted a foul odour (Cole's description of the disease shows that it was undoubtedly the same as the one I have studied). As the weather was cold, one of the chickens was taken into the house where a child about two and a half years old fondled it. Four days later the child was taken sick, apparently with diphtheria, from which it died. There were no other cases in the neighbourhood, and the affected chicken was the only possible source of infection.

"The diphtheritic disease of fowls, reported by Loir and Ducloux (*loc. cit.*), in Tunis, in 1894, spread to the people of that place, resulting in an epidemic of serious proportions. Ménard refers to the fact that men employed to feed young squabs, contracted diphtheria by blowing the masticated food into the mouth and crop of squabs (or young unfledged pigeons) suffering with that disease. Schrevens (*Bulletin de l' Acad. Royale de Méd. de Belgique*, VIII. (1894), p. 380) reports several cases of diphtheria in children, in which he traces the source of infection to certain poultry.

"Although the number of reported cases of the transmission of fowl diphtheria to the human species, and *vice versa*, is small in comparison with the extent of the disease in poultry, the evidence that such a transmission is possible is quite sufficient to discourage the careless handling of diseased fowls. It is a quite common practice, especially in the rural districts, to bring the sick chickens into the house for treatment, where the children of the household are allowed to fondle them at will. It is not improbable that when this disease is thoroughly investigated, the number of cases of direct infection from this source will be found to be much larger than it is at present supposed. Until such investigations are satisfactorily completed, the indiscriminate handling of diphtheritic chickens, especially by children, and the exposure of fowls to the infection of diphtheria in the human species, whereby they may become carriers of the virus, should be strenuously avoided."

ARECOLINE AS A SUBSTITUTE FOR PILOCARPINE AND ESERINE.

FRÖHNER formulates the following conclusions:—

(1) Arecoline is an active sialagogue in doses of .01 to .05 gram ($\frac{1}{6}$ to $\frac{3}{4}$ grains); (2) Like eserine, arecoline is a laxative; its action is equivalent to that of eserine and pilocarpine combined. It is ten times more active than pilocarpine and equally as active as eserine. Doses of $\frac{1}{6}$ to $\frac{3}{4}$ of a grain act in from fifteen to thirty minutes. (3) The laxative action of arecoline is accompanied by colicky pains; (4) Some subjects show nausea; (5) Large doses

produce sweating; (6) Often there is abundant discharge of urine; (7) The discharge of urine is due to the contraction of the walls of the bladder; (8) The heart-beats are accelerated; sometimes they are arhythmical; cardiac paralysis, diminution of the blood pressure and of the temperature; (9) Small doses do not influence the respirations; large doses produce dyspnœa and kill by asphyxia; (10) Toxic doses cause muscular spasms; .25 grams (4 grains) produce epileptiform convulsions; .50 grams (8 grains) kill with tetanic symptoms, like strychnia and nicotine; (11) The therapeutic dose in the horse, given hypodermically, is .01 .05 gram. It is best to commence with .05 gram, and if no action results, the dose can be repeated at the end of an hour; (12) In the ox the maximum dose is .1 gram (1½ grains); (13) Arecoline possesses no myotic action; only when applied locally does it produce myosis; (14) Of the areca nut powdered, the horse can take 200 grams and the ox 500 grams.

The anthelmintic doses are as follows:—

Horse	100 grams.
Ox	250 grams.

These doses contain from one to twenty-one grams of arecoline.

Arecoline holds an intermediate position between eserine and pilocarpine; it acts uniformly upon the glandular secretions and the muscular contractions; sometimes the secretory action may predominate.

Fröhner recommends this agent in all affections in which it is desired to produce an evacuation of the intestinal contents and its rapid dilution, such as in cases of intestinal obstruction.

Besides, its sialogogue action recommends the drug in exudative diseases, in rheumatoid inflammation of the foot.

Arecoline is contra-indicated in nervous colic, in the pregnant female, in tetanus, and in pharyngitis.

It can also be used in verminous colic.

Another advantage arecoline possesses over eserine is that it can be more easily preserved. Also it is less expensive.—*Jour. de Méd. Vét. et de Zoötech.*

PLANT ASSIMILATION AND RESPIRATION.

Mr. F. F. Blackman, B.Sc., of Cambridge, has completed some very fine experiments with a view to deciding the path by which carbonic acid passes out of the leaf in respiration and into it in carbon-assimilation.

Hitherto the teaching has been that the cuticle of the leaf played a large part in allowing the exit and entrance of gases, this teaching being founded on the experiments of Barthélemy, Boussingault and Garreau. Mr. Blackman points out where these experimenters erred, and why their conclusions are not reliable.

By the aid of a complicated and elaborate apparatus, through a series of most convincing experiments, it is now proved that gaseous interchange is chiefly stomatal. Mr. Blackman's conclusions are:—

1. Under normal conditions, practically the sole pathway for CO_2 into or out of the leaf is by the stomata. Since oxygen diffuses more readily than CO_2, through fine openings, the same probably holds for oxygen and the whole of the gas exchange.

2. Under abnormal conditions, when the stomata or intercellular spaces are blocked, and the surrounding tension of CO_2 is great enough, passage of CO_2, by osmosis, may take place.

3. That such closure of stomata as is held to take place in darkness does not prevent the distribution of gas-exchange closely agreeing with that of the stomata.

4. That the exhalation of CO_2 in bright light by a leafy shoot in Garreau's well-known experiment, is not the expression of any physiological truth, but only due to the imperfections of the conditions. Isolated green leaves, fully illuminated, allow no CO_2 to escape from them.

Army Veterinary Department.

The Queen has been graciously pleased to give orders for the following appointment to the Distinguished Service Order, in recognition of the services of the following officers during the operation of the Chitral Relief Force :—

To be Companion of the Distinguished Service Order—Vet.-Lieut.-Col. R. Poyser, A.V.D.—*The London Gazette.*

Veterinary-Lieutenant-Colonel W. A. Russell, District Veterinary Officer, Woolwich, is placed on retired pay from 6th instant.

Veterinary-Major J. Kettle has been directed to take up the duties of District Veterinary Officer, Woolwich, from 6th instant.

Veterinary-Captain G. H. Fenton and Veterinary-Lieutenant T. E. W. Lewis joined for duty at Woolwich on 20th and 23rd ultimo respectively.

Veterinary-Captain J. A. Braddell embarked for a tour of service in India on 17th ultimo.

Veterinary-Captain E. H. Kelly embarked for a tour of service in South Africa on the 1st instant.

Veterinary-Captain F. Raymond arrived from India on six months' leave of absence on medical certificate.

Owing to the death of Staff Veterinary-Surgeon R. G. J. Hurford, a Good Service Reward becomes vacant.

Legal News.

Poisoning by Muttor Peas.—At Birmingham on 6th and 7th January, Mr. Justice Day and a jury were engaged in hearing a case of poisoning by muttor peas. The action was at the instance of Mr. John Robinson Whitmore of Dudley Arms Hotel, who sought to recover damages for alleged breach of warranty from Mr. John Vincent Wood, maltster of Evehill, Dudley. According to the evidence led, plaintiff was a jobmaster who kept some thirty horses. Defendant was a maltster and also a corn and forage merchant. Defendant had met plaintiff and had urged him to buy a quantity of peas as a most excellent food for horses. Plaintiff had not been in the habit of using peas for his horses, but on the defendant representing to him that these peas were of an excellent and nutritious character, and had been used by defendant's own horses with great success, plaintiff was induced to buy 25 bags of them at 11s. 6d. per bag. He bought these peas entirely on the recommendation and warranty of defendant that they were a most excellent food for horses. The horses received a proportion of these peas in their food for some days, after which time an alarming proportion of them became ill. The veterinary experts called in to see the horses found that the peas were of *Lathyrus sativus* genus, and were undoubtedly the cause of the poisoning of the animals. Dr. Voelcker and several other experts certified to the well-known fact that these peas, when given in considerable quantities, were of a decidedly poisonous nature. After a long proof had been led, counsel for the defendant said his case was, that even a poisonous drug, strychnine for instance, was not only harmless, but even beneficial when properly mixed with other substances, and the same thing might be said with regard to the muttor peas. The jury, on the question of liability, found for the plaintiff, the amount of damages to be assessed by a referee.

Notes and News.

EDINBURGH UNIVERSITY COURT.—The Edinburgh University Court met on Monday, January 6th. Present: Principal Sir William Muir (in the chair), the Right Hon. the Lord Provost, Sheriff Mackay, the Hon. Lord Stormonth-Darling, Mr. Colston, Mr. J. Hope Finlay, Mr. A. Taylor Innes, Dr. Joseph Bell, Professor Sir William Turner, Professor Crum Brown, and Professor Butcher. The minutes of last meeting were submitted and approved. The following additional examiners were appointed for the year from 1st inst.:—D. A. Stevenson, B.Sc., M.Inst.C.E. (Engineering); W. Owen Williams, F.R.C.V.S. (Veterinary Hygiene); Dr. James O. Affleck (Medicine in its Bearings on Public Health); Sir A. C. Mackenzie, Mus. Doc. (Music).

OUTBREAK AMONG CATTLE IN EDINBURGH—EFFECT ON THE MILK SUPPLY.—Within the last fortnight it appears that there have been several cases where orders have been issued by the Judge of Police prohibiting the sale within the city of milk brought from cowkeepers' premises within the county. This action has been found necessary in respect of an outbreak among cattle in the vicinity of the city of a species of cow itch or scabies, which had been communicated also, in many cases, to the byre workers and those attending to the cattle. The orders were issued under the powers contained in section 25 of the Edinburgh Municipal and Police (Amendment) Act, 1891, which provides that—"Whenever it shall be certified by the Medical Officer of Health to the Prosecutor that milk is being brought within the city from any farm, dairy, or place beyond the city in which any person is suffering from infectious disease, or that in his opinion infectious disease is being spread or is likely to be spread by the sale or delivery of milk from any farm, dairy, or other place, within or beyond the city, and that the said milk is being sold or offered for sale in any shop or premises within the city, or distributed therein from carts or otherwise at the risk of communicating such disease to the inhabitants, the Prosecutor shall apply to a Magistrate or the Judge of Police for an order to prohibit the sale of such milk within the city from and after due intimation of such order, until the person affected has been removed, or shall have recovered from such disease, the premises have been disinfected and the bedding and clothing have been destroyed or thoroughly disinfected, and until it is certified by the medical officer of health that the said premises are free from infection and in a proper sanitary condition, and that the sale of milk from such place may be safely resumed, and every person contravening such order shall, for the first offence, be liable to a penalty not exceeding £5, and for a second and every subsequent offence to a penalty not exceeding £10." The most energetic and prompt measures have been taken in every case by Sir Henry Littlejohn and his assistants to have the supply of milk stopped at the cowkeeper's premises and at various milkshops in the city retailing the milk. In all these cases the police court officials have been able to obtain the necessary warrants and serve the requisite notices upon the dairykeepers in the county and dairies in the city within two hours after the reception of the certificate necessary under the Act. It is satisfactory to be able to announce that the outbreak shows signs of subsiding, and there is no cause for alarm.

THE HORSE TRADE.—The number of horses exported from this country during the eight months ended August 31st was 12,310, against 9,355 in the corresponding period last year, the value having been £345,024, against £290,852. There were 313 stallions, 2,519 mares, and 9,478 geldings exported. The number of horses imported was 22,755, against 15,614. In this year's figures there were 583 stallions, 6,583 mares, and 15,589 geldings, the value having been £605,586, against £360,913 last year. The greater part of the increase in numbers was from the United States and Canada.

Extracts from Foreign Journals.

SOME PHYSIOLOGICAL EFFECTS PRODUCED BY INTRAVENOUS INJECTIONS OF MALLEIN.

In a note presented in 1893 to the Biological Society, Messrs. Cadiot and Roger studied the action of tuberculine and mallein on the secretion of sweat, leaving deliberately aside the effects which these toxic agents might have on the heart and the vascular pressure. Of these two latter subjects M. Guinard has made a special study, with particular regard to the dog and the ass; he used raw mallein (*malléine brute*) diluted in its own volume of sterilised water. The results obtained are as follows:—(a) the ass, in particular, and the solipeds in general, have a greater susceptibility for mallein than have any other animals; (b) intravenous injections of mallein produce at first a slackening of the heart-beat with a very distinct increase of heart-energy. This latter effect is very marked in the ass, and resembles closely the action of pneumo-bacilline. In the secondary period of intoxication the heart-beat is hastened and heart-energy diminished; (c) the carotid pressure increases at first, after the first injections of mallein, then presents great variations, and at last falls slowly and gradually to far below its normal level; (d) mallein produces on the nervous system very remarkable exciting effects, succeeded by general depression and torpor; (e) the most characteristic and the most dangerous toxic manifestations produced by mallein do not show themselves at once, but develop slowly, and are not distinctly perceptible till long, sometimes several hours, after the injection. There is, in fact, a latent period of varying duration, which suggests the possibility of the evolution of toxalbumens and new poisons at the expense of the receiving organism, and in this way the provocation of self-poisoning (auto-intoxication) instead of intoxication properly so-called. To sum up, it is a logical deduction from these and other experiments that the increase of temperature, called forth by mallein as a detective of glanders, is due to heat-producing secretions performed by the organism itself under the provocative influence of the toxic agent, and performed all the more actively if the organism has been prepared by previous infection; hence the greater susceptibility of glanderous subjects, which react under treble doses, whilst healthy subjects are little affected.—*Journal de Médécine Vétérinaire et de Zootechnie.*

A GERMAN VETERINARY SCHOOL.

The following details are given in the *Berliner Thierärztliche Wochenschrift* regarding the veterinary college of the German capital. During the academic year 1894-5, there attended for the summer session 433, and for the winter 436 students, being a considerable decrease on the numbers for the five preceding years. The students who underwent the first examination in natural sciences numbered 113, and of these 74, or 65½ per cent., passed at their first attempt, as against 60 per cent. in the preceding year. But 29 of the students rejected as "insufficiently prepared" in one or other of the branches, got through at a second attempt three months later, thus bringing the total up to the respectable figure of 103, or 91 per cent., as against 89·3 per cent. the year before. Of the successful students 23 were commended as "good," and 4 as "very good." Fifteen students who might have gone up for this examination shirked it for one reason or another; but, even adding these to the number who did present themselves for examination, we get a total of 80 per cent. of passes.

For the professional or degree examination, there presented themselves 126 candidates, and of these 115 (91 per cent.) passed.

In the anatomical dissecting-rooms 71 horses, 64 horse-heads, besides a number of smaller domestic animals, were consumed. The sum of £170 was spent in anatomical preparations.

In the medical wards for the larger domestic animals 972 patients were received, of which 11 were killed, 168 died, and 42 were dismissed uncured. Of diseases there were 169 cases of lung complaints (lost 33 = 19 per cent.), 22 of tetanus, 16 of lumbago, and 387 of colic (lost 83 = 21½ per cent.).

Four hundred and fifteen horses and five cows were examined for soundness, and of these 73 horses were declared free from all blemish. Of the faulty animals 101 were found to be suffering from nervous diseases, 61 from roaring, 58 from asthma (together—64 per cent. of the faulty horses), 18 from restiveness, 23 from spavin, and 43 from other chronic lamenesses.

In the surgical wards 980 horses were treated, of which 27 were killed, 16 died and 95 were dismissed uncured; 595 were cured and 247 relieved. Serious operations were performed on 344 patients, of which 257 were cast and 94 were narcotised.

In the public wards 9,107 horses were presented for treatment, of which 1,964 were suffering from internal disorders and the rest from external. There were also presented 6,386 dogs, 174 cats, 128 other mammals, 553 birds (amongst which were 200 parrots), and actually a frog and a serpent!

By the travelling corps 692 visits were made; 104 complete studs or herds were examined and treated, and, in the way of single animals, 102 horses, 678 cattle, 65 pigs, 28 goats and 5 dogs. *Post-mortems* were performed on 4 horses, 58 cattle and 22 pigs. In the Pathological Institute *post-mortems* were performed on 213 horses and 2 cattle.

Reviews.

A Text-Book of Veterinary Obstetrics. By George Fleming, C.B., LL.D., F.R.C.V.S. Second edition. Revised. (Baillière, Tindall & Cox., London.)

In perusing this book, which undoubtedly is the best contribution in the English language to veterinary science, as applied to obstetrics, that we have had during the past few years, the first thing that strikes us is the enormous amount of work, time, and patience that Dr. Fleming must have devoted to bring it to such a pitch of perfection.

We have always looked upon the authors of books as of three kinds: firstly, the original writer of a book, Darwin, for example; secondly, the writer who compiles and adds his own experience; thirdly, the translator. To the first we must give the greatest credit, as what he writes is original, and yet what might be scribbled off as fast as pen could fly. To the second we must also give great credit, as he has to read and study many books, in many languages, before his own work can be of sufficient value. In this category we place the book under notice. To the third, the only credit due is that he happens to know a foreign language sufficiently well to enable him to translate a book from that particular language into his own.

We would point out to our readers that Dr. Fleming's work comprises about 700 closely printed pages, contains some 226 illustrations, and that there are two parts, divided into ten books. The first part treats of Eutokia, which is sub-divided into obstetrical anatomy, obstetrical physiology, the pathology of pregnancy, and normal parturition. The second part, under the heading Dystokia, is divided into books on maternal dystokia, fœtal dystokia, obstetrical operations, accidents after operations, pathology of parturition, and finally the diseases and abnormalities of the young animal. Dr. Fleming does

not confine himself to obstetrics only as regards the cow, but includes the mare, the bitch, the sow, ewe, and goat. Nor does he confine himself to obstetrics, pure and simple, but gives us the anatomy, physiology, and pathology of obstetrics.

It is impossible for us in our limited space to review this valuable work so fully as we should like to do. There is not an English-speaking or English-reading practitioner but will find, on perusal of the work, a very large amount of sound information, and we specially recommend it to practitioners and to students as a valuable work of reference. Dr. Fleming has been an earnest and brilliant contributor to veterinary literature for many years past, and this, his latest production, is perhaps his greatest. In conclusion, we congratulate the publishers and printers on the excellent manner in which they have produced this work.

Möller's Operative Veterinary Surgery. Translated and edited by J. A. W. Dollar, M.R.C.V.S. (D. Douglas. Edinburgh. 1895.)

This will doubtless be a welcome and useful addition to existing works on the surgical treatment of the domesticated animals. The translator seems to have accomplished his task with commendable faithfulness and to have given an interpretation of the original marked by perspecuity and with a suppression of his own personality which will bear imitation. If it is allowable to offer any criticisms that are not altogether favourable to this work—which seems doubtful in view of the cumbrous witticisms with which Mr. Bruce was assailed in the *Veterinary Record* when he ventured to doubt the correctness of the figure illustrative of prolapsus or inversion of the bladder—we would like to make a few remarks on it.

The work is divided into twelve sections, and the surgery of the different regions is described under diseases of head, neck, thorax, abdomen, stomach, and bowels, rectum and anus, urinary organs, female and male organs of generation, spine and pelvis, fore limb, and hind limb.

The section devoted to diseases of the head contains a useful exposition of dental diseases and the curative means to be adopted, though there is nothing particularly new recorded, and the directions as to how to operate are decidedly too vague, while the descriptions of causes and symptoms are rather too long drawn out.

There appears to be some confusion about the affections of the sinuses; the term facial sinus is used at one place for frontal, and a little further on the cavity is called frontal, the chapter itself being headed "Empyema of the Cranial Sinuses"!

A tumour of the false nostril is figured and called an atheroma; such a term is misleading.

There is an illustration of an actinomycotic tumour of the parotid gland which looks far more like a "wen" affecting the submaxillary lymphatic glands, and these are not due to actinomyces, and do not affect salivary glands. In operating for removal of cœnurus cerebralis, one is told to use a "few light blows of a hammer to drive in the trocar." If sheep had a voice in the matter one would think that they would prefer to be treated by an expert shepherd.

The section on diseases of the neck contains some very good descriptions of pathological processes and accidents affecting this region. The translator adds a note (page 132) that "Goitre and the condition resulting from it—myxœdema—are now treated with perfect success by the subcutaneous injection of thyroid extract, or feeding with thyroid gland." Myxœdema is surely generally held to result from atrophy or excision of the thyroid and not from goitre.

In the treatment of foreign bodies on the œsophagus of cattle, it is recom-

mended to perform *rumenotomy* and await results. Puncture of the rumen, and allowing the canula to remain in position, is doubtless intended.

The insertion of a gag in the mouth, and the adoption of expectant treatment, is not mentioned, and yet this is in the majority of cases all that is necessary. Again, the casting of the animal for the purpose of endeavouring to extract the foreign body, or in order to pass the probang, is not recommended, but as a matter of experience, either of these operations are much more easily accomplished in the recumbent position, the animal being placed on the left side.

This section contains a description of the operation of laryngotomy, and the statement is made that "the greater number of horses which, owing to roaring, have seriously suffered in the performance of work, can by this operation be restored to usefulness."

Sections 4, 5, and 6 are devoted to diseases of the abdominal walls of the stomach and of the intestines, and contain descriptions of hernia of the various animals, of foreign bodies in the alimentary tract, puncture of the intestine, and of the rumen and rumenotomy, invagination and rotation of the bowel, and prolapse of the rectum and anus.

Directions are given for the untwisting of a rotated colon. If this operation can be performed it must only be in the very earliest stages, most cases of twisted colon are difficult to give a draught or an injection to; it is not easy therefore to understand how the animal is to be kept quiet and in the standing position while the operator turns the bowel over.

In puncture of the intestine of the horse (which the author appears to regard as a dangerous operation) we are told that the instrument should be boiled for five or ten minutes in water or soda solution, the hair shaved off with a razor, the skin washed with soap and rinsed with a disinfectant (such as sublimate solution). If possible the field of operation should be washed with ether or spirit preparatory to washing with the disinfectant.

We consider this to be the dilettantism of antisipsis. Without any precautions beyond ordinary cleanliness, local or general bad results are extremely rare after this operation, and one often has to operate when there is littie time to wash or disinfect the skin, to say nothing of the tonsorial precautions.

The diseases of the urinary organs are treated of in the seventh section and are fully described. On page 337 is the illustration of inverted bladder, which led to Mr. Bruce's criticisms, and the translator's courteous and lucid explanations. We have seen two or three cases of inversio vesicæ but have not observed the two fountains figured in the picture.

There is a full description of amputation of the bladder, an operation which appears to be common in Germany: we trust it may answer. The eighth section treats of surgery of the male organs of generation and contains a good description of the castration of cryptorchids, but not a word about castration of normal horses or of the castration of other animals. This is a serious omission in a work on Operative Veterinary Surgery.

In the diseases of the female genital organs it is stated under prolapsus uteri that the application of the truss or the insertion of sutures into the labiæ are seldom of much use after reposition of the organ. Most English practitioners will hardly agree with this dictum. There is in this section a good description of inflammation of the mammary gland of the cow.

The remaining sections which are concerned with descriptions of the diseases of the spinal column and pelvis and fore and hind limbs, contain some good chapters on paralysis, fractures and lamenesses affecting these regions.

Several lamenesses are put down to nerve affections (due to stretching, &c.), which we have been content to assign to muscular or tendinous sprain.

In the treatment of bog spavin the evacuation of the sac and its injection with tincture of iodine are spoken of as possible remedial measures. We

have only to say that one student at the Christmas examination was rejected in his "practical" for hinting that one might adopt such means as a *dernier ressort* after firing and blistering, &c., had been tried in vain.

We knew that nothing was sacred to a sapper; it appears now that the hock joint is not exempt from surgical interference.

Among the causes of laminitis the practical factor in the etiology of this disease, according to our opinion, gets quite a subordinate place.

In the text (p. 696), severe work, continuous standing, and unskilful shoeing are placed first in the list, whereas it will be found in actual practice that faults in feeding are responsible for 90 per cent. of the cases of laminitis met with.

If there is one disease more than another in which a veterinary surgeon can, by skilful treatment, be of service, it is in laminitis, and it often remains with the practitioner whether a valuable animal shall recover its perfect usefulness or remain a cripple.

The treatment recommended here is bleeding, cold application, pilocarpine, morphia. In "dietetic" laminitis a dose of physic may be given. We have never seen bleeding do any good whether practised at the toe, the coronary, plexus, or at the jugular.

In severe attacks of laminitis there are, in our experience, three indications which must be fulfilled—to get the bowels open with oil, to remove the shoes, and apply hot poultices, and put the animal down if (as is usual in severe cases) it won't lie.

The description of the operation of lithotomy both in the horse and the ox, directs the operator to cut through the corpus cavernosum. There is no doubt that the spongy tissue is meant, but this body though erectile is of course never called corpus cavernosum.

ELEMENTARY VETERINARY MANUAL, FOR THE USE OF OFFICERS ATTENDING VETERINARY CLASSES. By BRUCE SETON, ESQ., Surgeon Captain, Indian Medical Service. (Gale and Palden, Aldershot.)

This booklet of 110 pages has been sent to us for review. The author, according to its index, having touched on some 230 subjects, it is evident that conciseness is its strong point. To amateurs it should be of some service as many of the diseases and injuries to which the horse is subject are commented on, although briefly, in a very practical manner.

Obituary.

Gresty Colin, Newgate Street, Accrington..	April, 1883,	Graduated
Ellis, Samuel Henry, Maldon, Essex ..	April, 1868	"
Carney, Nicholas, Openshaw, Manchester	April, 1863	"

Communications, Books, Journals, etc., Received.

The Veterinary Magazine, Philadelphia; Farm and Home; Agricultural Journal; Country Gentleman's Journal; American Veterinary Review; Johns Hopkins Hospital Reports; Columbia Calendar; Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); L'Echo Vétérinaire (Liége); Annales de Médecine Vétérinaire (Brussels); Oesterreichische Monatsschrift für Thierheilkunde (Vienna: M. Perles); Berliner Thierärztliche Wochenschrift (Berlin: Richard Schoetz); La Revista Veterinaria (Buenos Aires); La Revista Agronomica (La Plata); La Clinica Veterinaria (Milan); Il Nuovo Ercolani (Pisa).